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Mobile Application Use to Support Family, School, and Community Partnerships

Erin Ortega
Walden University

Walden University

College of Education

This is to certify that the doctoral dissertation by

Erin Ortega

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Review Committee
Dr. Narjis Hyder, Committee Chairperson, Education Faculty
Dr. Jennifer Courduff, Committee Member, Education Faculty
Dr. Danielle Hedegard, University Reviewer, Education Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
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Abstract

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Erin Ortega

MEd, University of Phoenix, 2009

BS, St. Thomas Aquinas College, 2003

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

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Abstract

Globally, a phenomenon has transpired involving the fast-paced growth of mobile technology and the rapid adoption of smart technology. As technology continues to become more mobile, it could be beneficial for educational systems to begin to evaluate how mobile applications impact family, school, and community relationships; however, little research exists on this specific topic. The purpose of this qualitative study was to uncover the experiences of district-level administrators during the implementation of mobile applications for a number of school districts. The diffusion of innovation theory, the unified theory of acceptance and use of technology, and various school, family, and community partnership frameworks informed this study. Administrators who oversaw the implementation of district mobile apps participated in this study. Data were collected using electronic questionnaires and phone interviews, with supportive information from archival documents. The resulting data were analyzed to uncover the unique experiences of each study participant and compared and contrasted to explore emerging themes. Families were identified as the target stakeholder group intended to be reached through mobile apps and participants recommended engaging diverse stakeholder groups when planning to implement apps. Focusing on the integration of new mobile apps with existing systems and supplying the apps with content emerged as themes. Communicating the availability of mobile apps to families and participant responsibilities associated with the implementation of mobile apps were areas of concern. This study potentially informs school districts regarding how to reach more diverse families.

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Dedication

My dissertation is dedicated to my family and friends who have knowingly (and unknowingly, at times) guided, supported, and inspired me throughout my life and during my long dissertation journey. My two inspiring, creative, loving, thoughtful, incredible children have known me to be a graduate-school student for most of their young lives. I hope that seeing me struggle, persevere, and honor the journey has inspired them as they grow, learn, and embark on journeys of their own. They are my motivation and why I work hard each day to live my best life. My loving, supportive, fun, hard-working, intelligent, amazing husband has been my rock day in and day out since the day we met, especially during difficult times. He has been by my side through every melt down, every victory, every good day, and every bad day. His love and support has never wavered, and for that I am eternally grateful. I know he is so proud of me and sharing all of this with him fills my heart with so much joy. My successes and achievements are as much his as they are mine. My small but mighty soul tribe (they know who they are) believed in me when I doubted myself and lifted me up whenever I was down. They are not friends, they are family and I am eternally grateful to have them in my life. My parents, grandparents, and siblings have waited for years to share this moment with me and their continued support and encouragement has meant the world to me. My Papa, who held on to life for so long, did not make it to see me finish, but I know his energy is here with me and I know he is smiling somewhere out there. I wish he was here to ask me one more time, "did you get your PhD, yet?" so I could answer, "yes, Papa, I finally did it.".

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Chapter 1: Introduction to the Study

Introduction

Mobile technology and smart technology have grown, and continue to grow, since the inception of cellular telephones in the 1970s. According to statistics, “between 2002 and 2003 the total cell phone users worldwide crossed the 1000 million boundary. It had taken 130 years for fixed-line-based telephony to reach this figure, whereas cell phones did it in a decade” (Carbonell, Oberst, & Beranuy, 2013, p. 902). In 2002, the number of mobile phones officially outnumbered the number of house phones worldwide (Ferraris, 2014). The adoption of mobile phones increased so substantially that "in 2004 there were an estimated 1,752 billion cell phone subscribers worldwide, up from approximately 91 million in 1995, and 1.158 billion in 2002” (Goggin, 2012. p. 1). By 2017, 64% of people in emerging and developing countries reported using the Internet and 87% of people in advanced economies reported the same (Poushter, Bishop, & Chwe, 2018). In addition, most people in all countries reported owning some kind of mobile device in 2015 but not necessarily a smart phone (Poushter, 2016, p. 3). According to research, “global statistics indicate that mobile subscriptions worldwide have passed the seven billion mark” (Humbani & Wiese, 2018, p. 409). By 2017, 42% of people living in developing economies and 72% of people living in advanced economies reported owning a smart phone (Poushter, Bishop, & Chwe, 2018). Despite the growth of mobile technology, research regarding how these developments impact the field of education is minimal. Specifically, as the usage of mobile phones for communication continues to increase, it

could be beneficial for educators to have access to literature regarding how mobile technology influences school, home, and community communications.

Today's mobile devices are completely portable, connected to the Internet indefinitely, and filled with a variety of productivity tools and entertainment options. As the levels of engagement and convenience these mobile devices provide continue to rise, some people continue to become more reliant on their devices. Because of this connection, mobile devices are beginning to be referred to as parts of some people's mental lives and a form of extended cognition (Barr, Pennycook, Stolz, & Fugelsang, 2015; Clark & Chalmers, 2002; Clayton, Leshner, & Almond, 2015; Wilmer & Chein, 2016). Due to the rapid adoption of mobile technology retailers and leaders representing a wide range of institutions and organizations have made efforts to bring their services to consumers through mobile devices (Humbani & Wiese, 2018, p. 409). As this deep connection to cellular devices continues to develop and grow, there is some research showing that the field of education is also slowly beginning to recognize the importance of research around this topic; however, there is a significant gap in available research on the topic in general. Because some people have begun to rely so heavily on mobile devices as the place where they access information, the field of education may benefit from additional research on how mobile devices influence communication between school, home, and the community.

Family, school, and community relationships have proven to significantly influence student success in many cases (Grant, 2011; Hampden-Thompson & Galindo, 2017; Henderson & Mapp, 2002; Lewin & Luckin, 2010; Olmstead, 2012; Smith et al.,

2011); yet, there is a significant gap in the literature regarding how mobile technology could be used as a communication tool to potentially deepen and influence these relationships (Lewin & Luckin, 2010; Rogers & Wright, 2008; Thompson, Mazer, & Flood Grady, 2015). It appears that mobile technology will continue to grow and be adopted on a broader, wider scale across the globe (Banupriya, Suba, Rajalakshmi, & Rajasri, 2015; Payal & Kumar, 2014; Stoyanov et al., 2015). Therefore, I designed this study to add to the knowledge base regarding the intersection between home, school, and community partnerships in the education sector and the mass adoption of mobile technology worldwide.

I designed this study so I could examine the implementation of mobile applications (also referred to in this document as mobile apps and apps) that school districts selected as communication tools to connect them with the families and communities they serve. I opted to focus on gathering information from district-level administrators who identified as the front-line individuals responsible for managing the implementations of these applications in their districts. I intentionally sought out potential participants who were the individuals with oversight of mobile app implementations in their school districts because they had first-hand knowledge of the entire process from beginning to end. By completing this study, I intended to add to the foundational knowledge base regarding mobile application implementations that could potentially support parent, family, and community partnerships by serving as a communication tool and a way to makes connections between schools, homes, and the community.

Multiple studies have found that parental engagement in education is connected to academic achievement, motivation to learn, and social-emotional adjustment and well-being across diverse families and across socio-economic statuses (Domina, 2005; Ginsburg-Block, Manz, & McWayne, 2010; Hill & Tyson, 2009; Jeynes, 2003; Miedel & Reynolds 1999; Pomerantz, Moorman, & Litwack, 2007). Wohlstetter, Kuzin, and Pedro (2011) and Zickuhr and Smith (2012) conducted studies in high-need, low-income areas and identified technology as a significant tool to engage families. These authors demonstrated how the data analysis used in this study could contribute to positive social change initiatives around home, school, and community connections, particularly around technology and family engagement. My intent behind the design of this study was to be able to offer additional insight into the communication between school districts and diverse populations of families and community members using a specific technological tool: a mobile application. Through interviews with individuals responsible for overseeing the implementation of mobile applications from a number of different school districts across the country, my goal was to add to the foundational knowledge about the processes of implementing and rolling out these types of tools for communication purposes in school districts. Additionally, I anticipated that understanding the process from the perspectives of the people responsible for overseeing the implementations would lead to recommendations for additional research on the topic.

In 1979, the middle class controlled over 46% of incomes, and the upper middle class/rich controlled 30% (Rose, 2016, p. 2). In 2014, the rich and upper middle class controlled 63% of incomes (i.e., 52% for the upper middle class and 11% for the rich),

and the middle class share had shrunk to 26% (Rose, 2016, p. 2). With this growing divide between upper and middle classes in the United States, it could be beneficial for school systems to find new and innovative ways to engage all families and the surrounding community in order to best serve its student population. Through this study, I was able to explore the experiences of the development and initial use of a mobile application for a number of district-level administrators who directly oversaw mobile application implementations. Additionally, I was able to illuminate the successes and challenges associated with this type of implementation from their perspectives, which could be helpful for other administrators considering implementing mobile applications in their districts. The relationship between schools, diverse families, and diverse communities is complex, so I designed this study to add to the body of literature regarding mobile technology tools designed for the engagement of families and community members. To achieve this, I conducted qualitative interviews with district-level administrators from various school districts in the United States and included archival documents in the data analysis to support the interview findings.

In this chapter, I present the background, problem statement, purpose of the study, and the research questions. The conceptual framework and nature of the study are also included. In addition, I provide a list of operational definitions and outline the assumptions, scope and delimitations, and limitations of the study. Lastly, I close the chapter with the significance of the study, a summary, and a transition to Chapter 2.

Background

Mobile technology has rapidly gone from the first generation of analog phones (1g) capable of just mobile calling to today's version of the fourth generation (4g) smart phone with full user support for accessing multimedia content, using wearable devices, and streaming in high-definition and real-time (Banupriya et al., 2015; Payal & Kumar, 2014). A highly anticipated fifth generation of mobile technology is proposed to become available in 2020, which will increase user capabilities, speed, and connectivity (Banupriya et al., 2015; Patil & Patel, 2015; Payal & Kumar, 2014). In 2 years, (i.e., 2013 and 2014) smart phone usage in the international market grew by 406 million, adding up to 1.82 billion devices in total, and the international usage of the Internet on mobile devices increased by 81% (Stoyanov et al., 2015, para. 1). It is predicted that by the year 2020, 25 billion devices will be connected to wireless networks (Sinha, Wei, & Hwang, 2017, p. 14).

It appears that this rapid growth will continue, based on the statistical increase in smart phone and mobile Internet usage. In 2014, the number of active mobile subscriptions exceeded the total world population (Ericsson, 2014; Kemp, 2014). The visible commitment people have made to their cellular phones also appears to support the prediction that mobile phone and smart technology usage will continue to grow. Statistics show, that on average, young adults send over 100 text messages per day and 3,200 texts per month, they check their phones around 60 times a day, and they use their phones as alarm clocks with it close to them even as they sleep (Roberts & Pirog III, 2013; Srivastava, 2005). Studies have also shown that some people become fearful and anxious

when disconnected from their mobile devices or unable to physically look at their screens (Clayton et al., 2015; Przybylski, Murayama, DeHaan, & Gladwell, 2013; Rosen, Carrier, & Cheever, 2013; Rosen, Whaling, Rab, Carrier, & Cheever, 2013). It is clear that these devices have become an integral part of daily life for many people.

To some, using a mobile device has become such a personal activity, and some people feel deeply connected to their phones for very personal reasons. Studies have connected smartphones to leisure (Lepp, Li, Barkley, Salehi-Esfahani, 2015) and the level of satisfaction of life (Lepp, Barkley, & Karpinski, 2014). Some people now rely on their phones throughout their daily lives for using productivity tools, seeking information, and social networking/interaction (van Deursen, Bolle, Hegner, & Kommers, 2015). Elhai, Levine, Dvorak, and Hall (2016) even connected the behavioral conditions of fear of missing out and the need for touch to increased smartphone usage (p. 514).

Application usage is a growing trend, and a number of people continue to spend an increased amount of time in apps while on mobile devices. Lim, Secci, Tabourier, and Tebbani (2016) showed that 90% of a large wireless Internet providers' bandwidth (i.e., 80% of which is used by smart devices) was used by 20 mobile applications that have 11 specific types of services, which are person-to-person communications, map services, e-mail services, video streaming, music streaming, social networking, news, search engines, shopping, advertising, and sports media (p. 8). According to Rowles (2017), "it is also likely that the role a mobile device currently takes in bridging the gap between the physical world and the online world will continue and grow" (p. 48).

According to another study, application usage now occupies almost 90% of the total time average U.S. mobile consumers spend on their phones (Heaton, 2014). Therefore, if a user were on a smart phone for 2 hours and 42 minutes, then 2 hours and 19 minutes would have been spent using applications. It appears that technology trends specifically relating to mobile applications accessed through smart phone technology will continue to become more and more relied upon and personalized as the industry progresses into the next generation of mobile technology. Following innovations in mobile technology is challenging because of the rapid pace at which innovations in this field occur. Virtual reality innovations are one example of an area where growth occurred suddenly over the past few years. An example of a how virtual reality innovations have impacted the field "is the sudden growth in 360-degree images and how easy these have become to create and share" (Rowles, 2017, p. 191).

In this new era of technology, some people have become reliant upon mobile devices for many different things beyond just making phone calls, and they will often turn to their mobile device for information before any other outlet (Lim et al., 2016; van Deursen et al., 2015). Statistics show that consumers using mobile, smart, and application technology are no longer similar in demographics. Worldwide use of these technologies includes people of all backgrounds, socio-economic statuses, and levels of education. Because of this, there is a unique opportunity to reach a broad audience of consumers through one modality.

Since research has indicated that family, school, and community relationships have influenced student success (Grant, 2011; Henderson & Mapp, 2002; Lewin &

Luckin, 2010; Olmstead, 2012; Smith et al., 2011) and mobile technology continues to grow in popularity and usage (Carbonell et al., 2013; Lim et al., 2016; Poushter, 2016), mobile technology might begin to significantly impact school, /home, and community relationships; yet, there is a significant gap in the literature regarding this topic. Studies have indicated that technology is not always used to its full advantage to help develop meaningful partnerships between schools, homes, and the community at large and that further research could be useful to evaluate how technology can be used to strengthen partnerships (Lewin & Luckin, 2010; Rogers & Wright, 2008; Thompson et al., 2015).

Based on an extensive literature review and the results of one study, researchers advised that "scholars need to examine parents' smartphone use to understand how the devices are utilized in parent-teacher communication and gain a theoretical understanding of why parents select specific modes in this new era" (Thompson et al., 2015, p. 188). Earlier, Rogers and Wright (2008) found that "parents and teachers are not taking full advantage of technologies to bridge the communication gap and build family-school partnerships" (p. 36). Barnett (2016) conducted a case study in a diverse urban setting and found that "access to technology was not the barrier to parental involvement in and of itself; in fact, all parents had access to technology" (p. 102).

These statements are particularly relevant because as people continue to use mobile, smart, and application technologies more frequently for personal communications, the communication gap could continue to widen if schools do not seek to meet families and the community where they are in regards to their choices of communication modalities. Companies have begun designing district mobile applications

for the specific purpose of building and nurturing the complex relationships between schools, diverse families, and a diverse community (Williams, 2018, para. 2). I designed this study so I could examine how the district-level administrators who directly oversaw the developments experienced the implementation and initial use processes with these types of mobile applications. The results of this study add to the literature focused on the topic of implementing and using a mobile technology tool for communicating between home, school, and community.

Problem Statement

With an increasing number of demographically-diverse people using a variety of smart devices and so much of some people's time spent using mobile applications, there is a unique opportunity to use district-level mobile applications to connect school systems with a large number of families and members of the community. However, little research exists on the implementation of mobile apps in education as a method of communication between schools, homes, and the community. This presents a problem for districts attempting to formulate a well-informed, research-based strategic implementation plan to begin using a mobile application for outreach and communication. It also creates an inconsistency in regards to communication methods implemented across districts.

Since the use of mobile technology in education is a new trend in the field, the problem is that there is a lack of defined effective practices to help guide educators in a successful direction and a limited research base for professionals to rely on for guidance and information. A literature gap in this area suggests that the field of education might benefit from wider, deeper research relating to technologies that can support the

partnerships between schools, families, and the community that will ultimately benefit all students. For this study, I focused specifically on examining mobile application implementations, given the shifts towards this mode of accessing technology versus previously used hard-wired technologies. The findings of this study contribute to the building of the knowledge regarding mobile technology implementations.

Purpose of the Study

The purpose of this qualitative study was to explore the processes of implementing and rolling out district mobile applications designed as communication tools to connect districts, schools, homes, and communities. I designed this study to gather information from the perspective of district administrators regarding their experiences with district mobile applications as the front-line individuals overseeing the related processes. Through a survey, interviews, and archival documents, I examined administrator experiences regarding what they expected from their district mobile applications and how they felt regarding whether mobile applications met their expectations. I also investigated how the planning and roll out processes were experienced by these individuals and what major successes and challenges were experienced during implementation and initial usage of the apps. As district administrators with direct oversight of the implementation, roll-out, and initial-use phases of their district's mobile applications, this target participant population gave me the opportunity to shed light on the experiences of the lead people in charge for these specific implementations. As the front-line individuals, the administrators with oversight of these projects were able to provide a foundational look into the processes associated with

implementing a mobile application at the district level. They also were able to identify gaps they experienced in their processes and make informed recommendations for other administrators considering implementing mobile applications for communication purposes in other districts.

As smart devices and the connection to mobile apps continue to increase, additional research into the topic is beneficial in order to understand how families and communities can connect with schools through this modality. I developed this study to add to the general knowledge on the topic in order to help build the understanding of experiences in the field. With an increasing number of demographically-diverse people using a variety of smart devices and so much of their time spent using mobile applications, there is a unique opportunity to use district-level mobile applications to connect the school systems with a large number of families and members of the communities. I designed this qualitative study to examine district-wide implementations of mobile applications for communication purposes in school districts in the United States.

Research Questions

I developed the following central research question and subquestions to guide this study:

What are the experiences of district level administrators regarding the implementation and initial use of mobile applications as communication tools to connect districts, schools, homes, and communities?

1. What did the administrators expect from their mobile app?

2. How did administrators feel regarding whether the app met expectations and how would they describe why they feel that way?
3. What were the major successes and challenges of the implementation and initial use of the mobile app from their perspective?
4. How was the planning process and roll out of the app experienced by administrators?
5. What recommendations would be helpful for other district-level administrators thinking about implementing a mobile application?

Conceptual Framework

The diffusion of innovation theory greatly informed my examination of the adoption of mobile applications in this study, especially because mobile application implementations represent a major shift in the field of education. Relying on mobile technology as a tool for communication between school, families, and the community is a new strategy some school districts are beginning to implement. The unified theory of acceptance and use of technology (UTAUT) also informed this study because it applies to the categories that could be influential in perceptions regarding mobile applications. In addition, the existing school, family, and community partnership frameworks were used as a theoretical lens because the tenets of all of them have influenced the design of many districts' initiatives around school, family, and community partnership.

The Diffusion of Innovation Theory

The diffusion of innovation theory was introduced in 1903 and "was first discussed historically by the French sociologist Gabriel Tarde, followed by Ryan and

Gross (1943) who introduced the adopter categories that were later used in the current theory popularized by Everett Rogers" (Kaminski, 2011, para. 1). Tarde is credited with developing the s-curve of diffusion and has since been referenced in many sociological studies (Kaminski, 2011). As the theory indicates, as cited by Kaminski (2011), there are five categories of people involved when an innovation happens: innovators, early adopters, early majority, late majority, laggards, and sometimes nonadopters. The theory does not seek to support the idea that people can be moved through the categories; rather, the theory supports the idea that the innovation should be modified to meet the needs of people in all categories (Kaminski, 2011). According to research, "the diffusion of innovation theory is often regarded as a valuable change model for guiding technological innovation... It also stresses the importance of communication and peer networking within the adoption process" (Kaminski, 2011, para. 1).

The diffusion of innovation theory informed this study because my position was consistent with the theoretical stance that individuals fit into a certain category of adopters during a specific innovation. Furthermore, I agreed that the initial category where an individual falls is where they should be provided with support. As I analyzed the data gathered during this study, the diffusion of innovation theory was a part of my thought process as recommendations were made. I also assumed that the districts involved in the study would fit into certain categories given that mobile applications are a new phenomenon in education.

This theory could also serve as a guiding framework for future studies regarding the adoption of mobile technology in education because it suggests meeting people where

they are when providing support rather than seeking to push them through phases. In educational settings, this is a recommendation that is repeated often when discussing how to serve families of students and bring them in as partners with school systems (Epstein et al., 2018, p. 221)). According to Epstein et al. (2018), educators attempt to meet parents and families where they are with their skill levels, abilities, capacity, etc. instead of immediately trying to move them to another level

The Unified Theory of Acceptance and Use of Technology (UTAUT)

Chakraborty and Rashdi (2018) describe The UTAUT framework as a framework that is often used to measure performance expectancy, effort expectancy, attitude toward using technology, social influence, facilitating conditions, self-efficacy, and anxiety. They indicate that these constructs are said to impact acceptance and use of technology. UTAUT, as a theoretical framework, has been applied in many information technology related studies; yet, it has not been widely used in educational contexts. The UTAUT model, if applied in educational contexts, could assist educators in planning technological implementations, because the model includes many of the aspects that could lead to issues with adopting new technologies. This model is a compilation of many of the other well-known, research-based technology acceptance models and encompasses aspects derived from theory of reasoned action (TRA), technology acceptance model (TAM), motivational model (MM), theory of planned behavior (TPB), model combining the technology acceptance model and theory of planned behavior (C-TAM-TPB), model of PC utilization (MPCU), innovation diffusion theory (IDT), and social cognitive theory (SCT) (Chakraborty & Rashdi, 2018). The UTAUT model

informed the data analysis section of this study, particularly, in order to help group the responses regarding expectations and experiences with the mobile applications.

School, Family, and Community Partnership Frameworks

The knowledge base that the school, family, and community partnership frameworks provide informed this study because the tenets of all of them have influenced the design of many districts' initiatives around school, family, and community partnership. Specifically, my assumptions in this study were influenced by the school, family, and community partnership frameworks. The approach and design of this study also had underlying influences of the frameworks.

Nature of the Study

The study was a qualitative in nature, so I could accurately illuminate the experiences and perspectives of a diverse group of district-level administrators. The administrators were asked to participate in this study because their experiences with mobile applications in their districts were similar. All were directly responsible for overseeing the implementation and initial use of mobile applications implemented as communication tools in their districts. Through an initial e-mail questionnaire and an interview conducted via video conferencing or telephone with various district administrators who had experienced the implementation of a mobile application, I discovered different realities and perspectives. It was my goal to illustrate individual experiences accurately, connect some key data points in order to illuminate trends, use individual responses to inform secondary questions and archival documentation requests, and present the study findings clearly and concisely. With different perspectives come

different realities that are constructed by each individual; therefore, the interviews I conducted were semi structured. This approach allowed for restructuring of questions based on initial responses but gave me enough structure to develop a solid framework for the study.

I used a basic qualitative approach with an open-ended, e-mail questionnaire and an open-ended interview in this study. In addition, archival documents were used to support the findings gathered through the questionnaire responses and interviews. The implementation of district mobile applications is a new phenomenon and this study was designed to document the experiences of a number of district-level administrators directly responsible for overseeing the implementation and initial use of mobile applications in their districts. Through this study, I wanted to investigate the research questions by illuminating the experiences of the individuals in charge of overseeing similar districtwide implementations of mobile apps. Ultimately, it was my goal to use the narratives of the participants' experiences to illuminate trends. While these administrators were not necessarily using the same mobile application, there are consistent features among all the applications designed for home, school, and community communications. Since there is not a lot of research available regarding mobile technology and family and community engagement in schools, a qualitative interview study provided me with the means to explore a new topic by examining the experiences and perspectives of a diverse group of administrators.

The implementation of a mobile application in education is a contemporary phenomenon and it has been said that "educational technology is constantly evolving and

expanding, and it is inevitable that this progression will continually offer new innovations" (Nguyen, Barton, & Nguyen, 2015, p. 210). The use of mobile applications in education as a mode of communication between school, home, and the community is a new innovation and a qualitative interview study allowed me to examine the phenomenon through a real-world lens. It also provided me the structure needed to ultimately conclude the study with recommendations that inform the scholarly community through the illumination of common trends that could provide guidance regarding future implementations. This qualitative interview study involved districts from areas across the United States and represented the spectrum of diverse school districts in the country.

Definitions

App: Software application developed for mobile devices (Zhang & Adipat, 2005, p. 293).

App store: The Apple App Store was opened in July 2008, and a quarter of the 550 apps available at the time were free. Within 3 months, 100 million downloads of the 3,000 available apps had taken place. After 4 months, the Google Play Store (Android Market) opened. By July 2013, the Google Play Store had more than 50 billion downloads (Power & Gordon, 2015, p. 442).

Innovation: A multistage process that transforms ideas into new and improved products, services, or processes (Baregheh, Rowley, & Sambrook, 2009, p. 1334).

Mobile applications: Software applications developed for mobile devices (Zhang & Adipat, 2005, p. 293).

Phablet: The hybrid of both a cellular phone and tablet with a screen size measured diagonally between 5.3–6.9 inches (Fraulini, Dewar, & Claypoole (2015)

Push notifications: Content is pushed to mobile-device users, the user does not initiate the accessing of the content. (Podnar, Hauswirth, & Jazayeri, 2002, p. 563).

Smartphone: Popular palmtop computer-phone combination with multiple capabilities (Park & Chen, 2007, p. 1349)

Smart technology: Technology that provides immediate access to any app or feature including mobile calling, e-mail, games, and Web browsers from any mobile device (Shim, Dekleva, Guo, & Mittleman, 2011, p. 658)

Assumptions

I assumed that the participants in the study were open and honest regarding their experiences and opinions regarding the implementation and initial use of their mobile applications. It was also assumed that individuals involved in the study provided me with an accurate and honest representation of their experiences, both positive and negative, and were forthcoming with answers to the questions in the study. Assuming that participants understood how to use their district mobile applications could have potentially impacted their responses to interview questions as well. Another assumption was that the district-level professionals accurately portrayed their oversight and responsibility of the mobile application implementation and initial launch of their mobile applications. I also assumed that the participants were experienced enough to speak about the complex experiences regarding the implementation and initial use of a mobile

application. Lastly, it was assumed that the participants provided relevant information about their experiences that would ultimately be beneficial to the research.

Scope and Delimitations

Since this study was one of the first looks at a new phenomenon, there were a few necessary delimitations that impacted the design of the study. The objectives of this study were bound to address only the beginnings of a thorough examination of perspectives and an initial look at experiences regarding a new mobile application. The district-level administrators were not the only individuals involved in implementing and launching mobile applications designed to connect schools with families and the community; however, their perspectives provided much insight into the process because they were the individuals with direct oversight. The interviews included semi structured, open-ended questions in order to first illustrate individual experiences and then to identify key themes and compare and contrast recurring themes among district-level administrators who oversaw the implementation and initial use of mobile applications, rather than to organize and categorize questions into specific areas of interest as identified in previous research and in the theories framing the study.

The theories that initially guided my thinking around this study could have led to different variations of the study, including one framed with the six types of parent involvement as referred to in Epstein's (Epstein et al., 2018) work at John Hopkins University, or one using the eight factors that impact technological acceptance as referenced in Venkatesh's (2003) UTAUT model. However, without a basic understanding of the phenomenon, it would have been difficult to justify either route. In

addition, relying on a singular theory to guide the design of the study would have limited the ability to combine information from technology-focused theories and family, school, and community partnership theories.

In this study, I also intentionally sought to include a small sample that represented a diverse population of school districts, rather than seeking to involve a large sample. I selected a small sample size in order to encourage deep responses to questions so that I could efficiently gather data that accurately summarizes perspectives and experiences and to effectively use questioning to illuminate trends. I selected administrators with oversight of mobile application implementations in order to gather information from the front-line individuals overseeing the processes associated with the implementation. This limits the generalizability of the findings to other populations of roles within school districts. While other directions were considered, I planned the study design thoughtfully and purposefully given the new phenomenon being explored.

Limitations

The first significant limitation of the study involved the participants selected for interviews. Due to the nature of the study, the number of individuals questioned for the study had to be limited in order to ensure enough time was dedicated to each interview. Since the initial electronic survey included mostly open-ended questions, I wanted to be sure I allotted a significant amount of time for the development of secondary interview questions, leading to the number of participants needing to be controlled. Due to the small sample size, representation was limited; however, there was a range of rural, urban, and suburban school districts represented in the study. Given the timeframe of the study, I

also limited the participants to innovators and early adopters of the new technology, which could have significantly influenced the responses. Other limitations were the size, location, and type of the study. The study was limited to nine school districts in the United States. Replicating this study across a broader range and larger number of school districts would support the findings in this study.

Significance

This small-scale, yet relevant research on mobile technology in the field of education contributes to the literature regarding technology trends in the education industry, specifically relating to using mobile applications as communication and connection tools with families and community members. With an increasing number of demographically-diverse people using a variety of smart devices and so much of their time spent using mobile applications, there is a unique opportunity to use district-level mobile applications to connect school systems with a large number of families and members of their communities. I designed this qualitative study on the implementation of district mobile apps to add to the understanding of how district-level administrators with direct oversight of the implementation and initial use of mobile apps experienced mobile-app technology in the context of family and community engagement with school systems. The findings of this study also add to the literature regarding how technology implementations can potentially support school, home, and community partnerships in general.

By focusing on data collection and analysis of the individual experience first, I was able to accurately view the experiences of implementing the mobile applications

through the lens of the individuals overseeing the processes. My analysis then progressed to grouping data to identify trends and ultimately inform the scholarly community through presenting the themes that emerged from comparing and contrasting each participant's experience. By documenting common trends regarding expectations, successes, and challenges, the results of this study provided much-needed insights into the processes and procedures and adds to the literature regarding education and technology initiatives. In addition to potentially informing planning, policies, procedures, and best practices, this study was designed to provide a transparent version of the reality of implementing a new type of technology at the district level.

The implementation process is important to plan and document and can significantly impact the sustainability of the app in the long run, so the contribution of this study to the literature on implementations of this nature has the potential to inform other similar studies. My analysis of district-level administrator experiences regarding the implementation provides valuable feedback regarding the process as well and contributes to the literature regarding technology trends in the education industry, specifically relating to using mobile applications as communication and connection tools with families and community members.

The results of this study provide insight into the implementation and initial use of mobile apps as communication tools for school districts in a variety of settings across the country through interviews with the front-line individuals with oversight of the processes. With a number of diverse residents across the country, it would be beneficial for school systems to find ways to engage families and the community in order to best serve their

student populations. Smith, Wohlstetter, Kuzin, and Pedro (2011) identified technology as a significant means to engage low-income families. In another study, Zickuhr and Smith (2012) identified that both African Americans and English-speaking Latinos are just as likely as Whites to own a mobile phone and are even more likely than Whites to use their phones for a wider range of activities. These findings supported the need for this type of study and demonstrated how the findings of this study could contribute to positive social change initiatives around home, school, and community connections. It will also be important for future studies to look at the usage of built-in translation services to determine whether families whose first language is not English might find that particular service to be beneficial when they are receiving information. In addition to analyzing the experiences regarding the implementations and initial usage of the mobile apps, I designed this study to examine the major successes and challenges of these implementations.

Summary

The research on mobile technology and mobile applications suggests that the world has entered into an era of personalized, smart technology and it appears that it will continue to advance rapidly. Another trend visible in the growing body of research supports school, family, and community partnerships as a factor that positively impacts student success (Epstein et al., 2018). Because little research exists on the implementation of mobile apps in education as a method of communication between schools, homes, and the community, a potential problem is evident for districts trying to formulate a well-informed, research-based strategic implementation plan to begin using

mobile applications for outreach and communication. As smart devices and the personal connection to mobile apps continue to increase, it is beneficial to have access to additional research in order to understand how families and communities can connect with schools through this modality. I designed this qualitative study, framed using the diffusion of innovation theory; the UTAUT; and the knowledge base that the school, family, and community partnership frameworks provide, to explore district-wide implementations in order to shed light on and add to the body of literature on the topic.

The results of this study add to the knowledge base about the experiences of district-level administrators responsible for overseeing the implementation and initial use of district-level mobile applications designed to connect their districts with the families and communities they serve. With an increasingly diverse population in the United States, it would be beneficial that school systems try to find ways to engage families and the community in order to best serve its student population.

In Chapter 2, I will present an extensive review of the professional and academic literature focusing on mobile technology; mobile technology in education; and family, school, and community partnerships. In Chapter 2, I will also highlight the significant literature gap regarding mobile communication methods in the field of education.

Chapter 2: Literature Review

Introduction

Chapter 2 begins with the problem and purpose of this study, exploring the experiences of district-level administrators responsible for overseeing the implementation of mobile applications designed for communication purposes connecting school, home, and the community. After the problem and purpose, I present the literature search strategy used for researching the topic. Next, the conceptual framework is described, and the current research is presented. The chapter concludes with a summary and transition to Chapter 3.

With an increasing number of demographically-diverse people using a variety of smart devices and so much of some people's time spent using mobile applications, there is a unique opportunity to use district-level mobile applications to connect school systems with a large number of families and members of the community. However, little research exists on the implementation of mobile apps in education as a method of communication between schools, homes, and the community. This presents a problem for districts attempting to formulate a well-informed, research-based strategic implementation plan to begin using a mobile application for outreach and communication and creates an inconsistency regarding communication methods implemented across districts.

Since the use of mobile technology in education is a fairly new trend in the field, the problem is that there is a lack of defined, effective practices to help guide educators in a successful direction and a limited research base for professionals to rely on for guidance and information. Researchers have concluded that technology is not always used to its

full advantage to help develop meaningful partnerships between schools, homes, and the community at large (CITE). These researchers concluded that further research would be useful to evaluate how technology can be used to strengthen partnerships (Lewin & Luckin, 2010; Rogers & Wright, 2008; Thompson et al., 2015). A gap in the literature in this area suggests that the field of education might benefit from wider, deeper research relating to technologies that can support the partnerships between schools, families, and the community that will ultimately benefit all students. For this study, I focused specifically on examining mobile application implementations, given the shifts towards this mode of accessing technology versus previously used, hard-wired technologies. The results of this study contribute to the building of knowledge regarding mobile technology implementations.

The purpose of this qualitative study was to explore the processes of implementing and rolling out district mobile applications designed as communication tools to connect districts, schools, homes, and communities. The participants involved in the study were a small group of district-level educators from across the United States. The data collection entailed an electronic survey, phone interviews and/or video conferences, and a review of archival documents. Through data analysis, I examined the individual experiences of the participants and compared and contrasted them to highlight themes and trends. The data analysis process was designed to identify trends regarding the implementations and initial use of district mobile applications. Given the gap in the literature, I designed this study to potentially add to the literature informing the field of

education about mobile technology implementations that could potentially support parent, family, and community partnerships.

I designed this study to gather information from the perspective of district administrators regarding their experiences with district mobile applications as the front-line individuals overseeing the related processes. Through a survey, interviews, and archival documents, I examined administrator experiences regarding what they expected from their district mobile applications and how they felt regarding whether mobile applications met their expectations. I also investigated how the planning and roll out processes were experienced by these individuals and what major successes and challenges were experienced during implementation and initial usage of the apps. This target participant population gave me the opportunity to shed light on the experiences of the lead people in charge for these specific implementations. As the front-line individuals, the administrators with oversight of these projects were able to provide a foundational look into the processes associated with implementing a mobile application at the district level. They also were able to identify gaps they experienced in their processes and make informed recommendations for other administrators considering implementing mobile applications for communication purposes in other districts. As smart devices and the connection to mobile apps continue to increase, additional research would be beneficial in order to understand how families and communities can connect with schools through this modality; therefore, I developed this study to add to the general knowledge on the topic in order to help build the understanding of experiences in the field.

Literature Search Strategy

The literature I reviewed for this study included information from a variety of peer-reviewed journals, books, and national and state education publications. My search for literature to review began in the Walden Library within online education journals accessed through the ERIC, SAGE, LearnTechLib, and ProQuest databases. The Boolean terms used in my search included: *education AND, mobile technology, technology, smart phones, mobile phones, text messaging, mobile applications; family engagement AND, mobile technology, technology, smart phones, mobile phones, text messaging, mobile applications; school partnership AND, mobile technology, technology, smart phones, mobile phones, text messaging, mobile applications;* and *mobile AND communication AND family and school.*

After exhausting the resources within these databases, I expanded the search using Google Scholar connected with Walden's online library, which allowed for an expansive search encompassing many other disciplines. The Boolean terms were expanded to included *parenting AND; mobile technology, technology, smart phones, mobile phones, text messaging, mobile applications; and parent engagement AND, mobile technology, technology, smart phones, mobile phones, text messaging,* and *mobile applications.* This search expansion allowed me to make many connections between this study and the fields of information technology and healthcare. The information pulled from journals, such as the *International Journal of Human-Computer Interaction, the Journal of Medical Internet Research,* and *GetMobile: Mobile Computing and Communications,* among others, proved to be relevant in informing the use of technology as a way of

connecting parents and guardians with relevant, meaningful information. The information included in the Chapter 2 review is broken down into categories based on the themes uncovered during the review.

Conceptual Framework

The diffusion of innovation theory greatly informed the adoption of mobile applications in this study, especially because mobile application implementations represent a major shift to relying on mobile technology at the district level as a tool for communication between school, families, and the community. The UTAUT also informed this study because it applied to the categories that could be influential in perceptions regarding mobile applications. In addition, the existing school, family, and community partnership frameworks were used as a theoretical lens because the tenets of all of them have influenced the design of many districts' initiatives around school, family, and community partnership.

The Diffusion of Innovation Theory

The implementation of mobile applications in the field of education is a new phenomenon and a shift in traditional practices. The diffusion of innovation theory informed this study because I agree that the initial category where an individual falls is where they should be provided with support. As the theory indicates, there are five categories of people involved when an innovation happens. The five categories include: innovators, early adopters, early majority, late majority, laggards, and sometimes non-adopters. The participants in this study could fit into the first categories as individuals

responsible for implementing a new technological solution. Additionally, I thought about this theory as I analyzed data and made recommendations. “

The Unified Theory of Acceptance and Use of Technology (UTAUT)

The unified theory of acceptance and use of technology (UTAUT) also informed this study, as it applies to the categories that could be influential in perceptions regarding mobile applications. The participants made comments that fit into the UTAUT framework about performance expectancy, effort expectancy, attitude toward using technology, social influence, facilitating conditions, self-efficacy, and anxiety. These are the constructs said to impact acceptance and use of technology and the experiences of the participants involved in this study indicated that these constructs apply in situations involving new technologies. UTAUT, as a theoretical framework, has been applied in many information technology related studies, yet it has not been widely used in educational contexts. The UTAUT model, if applied in educational contexts, could assist educators in planning technological implementations, as the model includes many of the aspects that could lead to issues with adopting new technologies. The UTAUT model informed the data analysis section of this study, particularly, in order to help group the responses regarding expectations and experiences with the mobile applications.

Lee (2013) designed a study to look at factors impacting the adoption of the mobile e-book in South Korea, integrating the diffusion of innovation theory into the theoretical framework, similar to this study. Lee used an online survey and data analysis to generate findings and concluded that individual innovativeness had the most significant influence on the perceived usefulness and perceived ease of use of the mobile

e-book. In addition, the author discovered that perceived usefulness and perceived ease of use affect innovation resistance as well as the previously mentioned aspects. In turn, innovation resistance turned out to have a significant negative influence on the intention to use (Lee, 2013).

In a Taiwanese study of primary teachers, Ho et al. (2013) suggested that mobile phones could be useful in parent-teacher communication and could assist with reducing barriers to frequent two-way communications, consistent messages, and effective relationship building. The researchers used the UTAUT model to explore technology acceptance and suggested that "perceived usefulness and perceived ease of use have direct positive relationships with attitude, and attitude further influences behavior intention directly. Results of UTAUT show perceived usefulness affects behavior intention" (Ho et al., 2013, p. 113).

School/Family/Community Partnership Frameworks

I have been immersed in research around the topic of school/family/community partnership; therefore, the approach and design of this study has underlying influences of the frameworks previously mentioned. A qualitative case study (Smith et al., 2011) of 12 urban charter schools in six states in the United States uncovered national data about parental engagement and technology referenced one specific theory as a general guide for the study. This was clearly articulated with the statement: "Joyce Epstein's model of involvement was used as a backbone for the study in order to assess whether different strategies are utilized in the charter context" (Smith et al., 2011, p. 76).

Literature Review Related to Key Variables and/or Concepts

The Growth of Mobile Technology and Smart Technology

Mobile technology has evolved in a short amount of time. Globally, a phenomenon has transpired in the past few decades involving the rapid growth of mobile technology and the creation and quick adoption of smart technology. Currently, mobile technology is in its fourth generation, with its fifth generation proposed to become available in 2020 (Banupriya, Suba, Rajalakshmi, & Rajasri, 2015; Patil & Patel, 2015; Payal, & Kumar, 2014;). Patil and Patel (2015) identified the generations of mobile technologies as moving quickly from the first generation (1g) in 1970 to the predicted fifth generation (5g) model anticipated to be available in 2020 (p. 3143). In the seventies 1970s there was a 1g analog phone that provided mobile calling services. In 1990 digital calling and text messaging were introduced to consumers within the second generation of mobile technologies. Two thousand four was the year that high quality data, audio, and video was integrated into services when 3g was introduced. The 4g service, which has been made widely available in the past few years, allows users to connect to mobile services via wearable devices and remain connected to the Internet, with high connectivity speeds. According to research, "the 5G, future advanced wireless communication technologies will offer a variety of services like mobile internet, mobile commerce, and bill payment services with ever pleasant, highly sophisticated and super fast nature and will utilize advanced technologies…" (Prasad & Aithal, 2017, p. 35). It is predicted that by the year 2020, when the release of 5g wireless technology is expected to

be released, 25 billion devices will be connected to wireless networks (Sinha et al., 2017, p. 14).

To summarize, mobile technology has gone from the 1g analog phone capable of mobile calling, to the 2g digital phone with calling, texting, and emailing capabilities, to the 3g phone with high-speed connectivity allowing users to do more digital tasks such as gaming and connecting to the web. Today's version of the 4g smartphone has full user support for accessing multimedia content, using wearable devices, making mobile payments, experiencing virtual reality, and streaming in high-definition and real-time (Banupriya et al., 2015, pp. 40-41; Payal & Kumar, 2014, pp. 7523-7524, Rowles, 2017, pp. 191-209).

According to Jeno, Vandvik, Eliassen, & Grytnes (2019), "smart phones and tablets have become a ubiquitous and central aspect of today's society" (p. 35). Smartphone usage continues to rise rapidly, along with the overall usage of mobile technology, on a global level. From the beginning of 2013 to the end of 2014 global usage of smart phones increased by 406 million, reaching 1.82 billion devices and the use of the Internet via mobile devices increased by 81% (Stoyanov et al., 2015, para. 1). While mobile technology started with wireless calling capabilities just a few decades ago, the market in has progressed to demand features way beyond just calling. Some people are using mobile devices to remain connected to the Internet indefinitely; in 2013 the United States' mobile traffic grew 81 percent and it is predicted to grow eleven times that number by the year 2018. In addition, wireless network usage and the amount of mobile traffic consumed by video streaming is predicted to increase by more than two thirds

(Gong, Hart, & Mao, 2015, p. 48). In this new era of technology, some people are reliant upon mobile devices for so many different things, and will often turn to their mobile device for information before any other outlet. The usage of mobile devices has become a very personal activity during which time some users are deeply connected with their device. This is evident when smartphones and tablets lose power; one can witness people scrambling to locate a plug or USB port to get a charge. People, in general, cannot seem to function in normal daily operations without access to their smartphones.

Smartphones have become the most used devices to accomplish tasks and access information on the Internet. Due to this adoption of mobile technology, companies have developed specific techniques to allow them to reach consumers via mobile devices. The adaptations companies have made include online portals and mobile applications. (Palos-Sanchez, Saura, Reyes-Menendez, & Esquivel, 2018, p. 259). According to research, "mobile devices are the most used technology tools to access the Internet since they allow access from anywhere" (p. 258). It appears that the number of people using smart mobile devices will continue to grow rapidly; Cisco (2014) predicted that by the year 2019, more than half of all mobile devices will be using smart technology and that an annual global mobile data traffic increase of 57% will continue from 2014-2019. Over the course of the last few decades, "wireless and mobile communication technologies exhibit remarkable changes in every decade. The necessity of these changes is based on the changing user demands and innovations offered by the emerging technologies." (Kabalci, 2019, p. 329).

It is very clear that some smartphone users are motivated to use their devices for different reasons. Among many examples of usage, Pew Research Center (2014) found

that 34% of adults (18+) use a cell phone over any other device to go online, 74% used their phones for directions, 41% used their cell phones in the last month to set up a meeting, and 9% have texted a mobile charitable donation. It is also clear that application usage now occupies almost 90 % of the total time average U.S. mobile consumers spend on their phones (Heaton, 2014). So, if a user is on a smart phone for 2 hours and 42 minutes, then 2 hours and 19 minutes will have been spent using applications. Across personal and professional settings “faster processors, improved memory, and smaller batteries in concert with highly efficient operating systems capable of advanced functions have paved the way for applications (commonly referred to as apps) that are affecting our personal and work environments” (Ozdalga, Ozdalga, & Ahuja, 2012, p. 128). In the business sector, digital impact has become a major marketing and public relations topic. In 2014 at the International Digital Impact Conference (Cowlyn, 2014), mobile applications were a main focus during presentations designed for a global audience.

In 2015, a digital marketing trend identified as one to watch was wearables (Chaffey, 2015), like the Apple Watch and Google Glass, which integrate with applications based on user selection. Cisco (2014) illustrated this trend by examining the global usage of wearable mobile devices; they found that in 2014 there were 109 million wearable devices being used globally. As trends continue to evolve in this field, it will be important for other fields to remain abreast in order to determine how mobile technology innovation will play a role in their respective fields. According to Riggs and Gordon (2017) "the emergence of web technology creates tremendous opportunity to advance

good government, through increased information, interaction with the public, and cost-effective, efficient means of conducting public transactions" (p. 100).

Parent, Family, and Community Engagement in Education

Parent and family engagement in education is a topic that has been receiving an increasing amount of attention. Since the late nineteen nineties, a number of key researchers have emerged in the field, and have dedicated years to researching the topic. Two of the most recognized, Henderson and Mapp, synthesized 51 articles ranging from 1995 to 2002 and their analysis helped define language around parent and family engagement. Since the studies they looked at included children of all ages and all grade levels from pre-K to postsecondary, the researchers were able to broadly define key terminology related to the field resulting in general findings applicable across levels to inform bodies of work on the topic. Their synthesis identified three major research categories: "studies on the impact of family and community involvement on student achievement, studies on effective strategies to connect schools, families, and community, and studies on parent and community organizing efforts to improve schools" (Henderson & Mapp, 2002, p. 21). This study will fall into the category focused on effective strategies to connect schools, families, and the community and can contribute to the literature on the topic. This study can help inform important decisions in the school district where the study is being conducted and also help guide other professionals in the field of education regarding technology implementations that support school, family, and community partnerships.

The synthesized studies that focused on the impact of parent and community involvement on student achievement consistently indicated that family involvement played a role, among other factors, in raising student grades/academic achievement, improving attendance/behavior, and assisting with socialization. The basic tenant that was most prevalent in the studies about effective strategies was relationships. Henderson and Mapp (2002) identified an overarching conclusion that "when programs and initiatives focus on building respectful and trusting relationships among school staff, families, and community members, they are effective in creating and sustaining family and community connections with schools" (Henderson & Mapp, 2002, p. 43). Culture and class diversity among parents was found to be a significant factor that required attention in many of the studies synthesized for this analysis. Henderson and Mapp (2002) stated, "parent involvement programs that are effective in engaging diverse families recognize, respect, and address cultural and class differences" (p. 48). The studies focused on parent and community efforts to improve schools drove the researchers to conclude that building the capacity of parent and community leaders has contributed to systemic changes to schools and educational programming.

While it appears that family and community engagement has a significant impact on student achievement, parent engagement is still a term that is evolving and inconsistency remains an issue when it comes to defining exactly what it means. One framework that continues to grow in popularity is Johns Hopkins University's Epstein framework of six types of involvement (Epstein, Coates, Salinas, Sanders, & Simon, 2005) developed by Epstein and her colleagues. According to this framework, the six

types of involvement are parenting, communicating, volunteering, learning at home, decision making, and collaborating with the community. Another framework that has been adopted at a national level is Mapp's dual capacity-building framework for family–school partnerships. This framework is "a new framework for designing family engagement initiatives that build capacity among educators and families to partner with one another around student success" (SEDL, formally known as Southwest Educational Development Laboratory, 2013, p. 6). The dual capacity framework identifies an equal focus and reliance on building the capacity of families and also building the capacity of school staff.

Additionally, the National Parent Teacher Association (PTA) adopted a set of standards to guide planning efforts regarding family/school relationships. The set of standards are appropriately called "national standards for home-school partnerships". The six standards include: welcoming families into schools, engaging in two-way communication with families, collaborating with families to support student success, empowering families to advocate for children, sharing decision-making power, and collaborating with the community (National Parent Teacher Association, n.d.).

Studies are beginning to emerge using these new sets of standards as frameworks, and as evidenced by a growing body of research, it appears that these frameworks will continue to assist in data analysis relating to family, school, and community partnerships. The fact that the world is steadily moving into a new technological era, a mobile era, it appears that it would be beneficial for school systems to consider mobile technology when planning to support family, school, and community partnerships. However, there is

still an identified under-utilization of technology in building and sustaining these important relationships and a significant gap in the literature on the topic.

Technology and Family, Community, and School Partnerships

A qualitative case study of 12 urban charter schools in six states in the United States uncovered national data about parental engagement and technology. The researchers strategically focused on schools with high percentages of Hispanic and Black students, English language learners (ELL), and students who qualified for free or reduced lunch. Smith et al. (2011) found a significant gap in the research relating to how schools can increase the participation of disenfranchised families and their study sought to qualitatively explore the phenomenon of parent involvement in urban charter schools. Many of the schools involved in the study reported that technology had a significant impact on positive parental involvement and on communication capabilities. Smith et al. stated, "using technology to enable parent involvement had the benefits of instant communication and reducing the time costs associated with other communication methods. It also allowed for two-way communication, something not afforded when information is only sent to the parents" (p. 87). Examples of the types of technology used by these charter schools include: websites, multilingual messages through systems, and e-blasts.

While the Epstein framework was used to define the different types of parent involvement, a major limitation and area for future work was the lack of a common understanding of parent involvement versus parent engagement. Many people interviewed had conflicting responses when asked questions about parent involvement

and parent engagement. This finding supports the need for further research on the topic to add to a growing body of research that is beginning to define key terminology and clarify definitions.

A 2012 dissertation (Olmstead, 2012) identified a significant gap in the research regarding how electronic communications can be used to engage parents and help them to partner with teachers to support student achievement. Olmstead (2012) conducted a small-scale mixed methods study with fourth through sixth grade parents and teachers in California. The data revealed, "both parents and teachers perceived that most types of proactive involvement can be fostered through the use of technology" (para. 3). The major recommendation from the study was to continue to evaluate the effectiveness of ever-changing technologies, as they will indefinitely play a role in future parent engagement strategies.

In the United Kingdom, "supporting links between home and school has been a priority for policymakers, with a range of policies and strategies aimed at increasing parents' engagement with schools and children's learning" (Grant, 2011, p. 292). Due to the fact that digital technologies are now embedded deeply in people's homes and in schools, technology is a relevant topic for research studies, like one conducted in two secondary U.K. schools (Grant, 2011). This study "aimed to understand the context of social tensions, politics, and cultures in the home–school relationship in order to critically consider the ways that digital technologies may play out in supportive or challenging ways" (Grant, 2011, pp. 292-293). The two secondary schools where the study was conducted are very different in demographics (ie: socio-economic statuses, completion

rates, ethnicities, eligibility for free/reduced lunch, home neighborhoods, home languages spoken, etc.), but the study is not generalizable. It does, however, illuminate the topic for planning purposes and recommendations for future studies. Through interviews the researcher found that overall, "parents, children, and teachers thought that using digital technologies to communicate between home and school would be a positive change" (Grant, 2011, p. 296). All parties agreed that digital communications could help alleviate some of the issues with traditional methods of communication. An interesting outcome of the study was the finding that teachers generally viewed technologies that children were using outside of the classroom as a negative influence on their learning. According to the study, "children were, however, engaged in a range of activities outside school that were likely to offer them opportunities for learning, with digital technologies playing a role in each" (Grant, 2011, p. 298). One of the biggest recommendations in the conclusion of this study was that digital technology implementations in home-school communications require a significant amount of support built in to ensure that parents and teachers are able to use the technologies to benefit children. Also, "the role of children themselves in parental engagement and the home-school relationship is important although often overlooked" (Grant, 2011, p. 293), so children need to also be a part of the processes when implementing digital technologies for home-school communications.

A 2015 study (Thompson et al., 2015) involved 1,349 parents of students from a school district in the Midwestern United States who completed the Parental Academic Support Scale (PASS). The PASS is a 16-item multidimensional measure on which respondents rate the frequency of communication across five factors: academic

performance, classroom behavior, preparation, hostile peer interactions, and health. Media richness theory was applied in this study and served as the framework by which parents evaluated the communication modes they were using to connect with schools. By applying this theory, researchers were able to provide a framework for assessing the richness or leanness of particular modes of communication based on parental feedback, framed around the five factors associated with the PASS. The study was limited in that the respondents to the survey were predominantly White with at least an associate's degree, however, the study conformed to a rigorous institutional review board (IRB) process and the mixed-methods design allowed the researchers to gather valid and meaningful data about the topic. The data collected in this study "revealed an increase in parents' preference for frequent e-mail communication as well as for emerging modes of parent-teacher communication such as text messaging and social media" (Thompson et al., 2015, p. 187). Based on an extensive literature review and the results of this study, the researchers advised that "scholars need to examine parents' smartphone use to understand how the devices are utilized in parent-teacher communication and gain a theoretical understanding of why parents select specific modes in this new era" (Thompson et al., 2015, p. 188). Ho, Hung, and Chen (2013) and Mazer (2012) also asserted that mobile technology is a viable communication tool and that e-mail is the most preferred method of communication by parents when it comes to school communications. Koch (2016) concluded that regardless of parental demographics they prefer e-mail, websites, and student information systems to communicate with schools and find school information.

Lenhart, Ling, Campbell, and Purcell (2010) cited the convenience of e-mail as a way for school administrators to connect with families.

Xie, Zhao, Xie, and Lei (2016) conducted a study with close to 700 Chinese adolescents and found that for these children mobile phones were a significant social status symbol and that "teacher-student relationship and student-student relationship play the serial multiple mediator roles in the relation between the attitude towards mobile phone as a social status symbol and life satisfaction" (p. 700). This research study conducted in rural China suggests that mobile technology is a risk factor in adolescent development with specific relationships as mediators. The researchers recommended that this must be investigated further.

Studies focused on new technologies and school/home communications methods/modalities identify texting as a viable option to connect educators and parents (Edwards, 2016; Goodall, 2014; Lazaros, 2016; Parker & Chen, 2013; Stephens, 2013; Thompson et al., 2015). Parents in one study felt that "receiving text messages would be a more effective method of communication as opposed to a traditional phone call home" (Lazaros, 2016, p. 23). A study (York & Loeb, 2014) that evaluated the effectiveness of a texting program called READY4K! found that the year-long texting support service positively affected home literacy work parents engaged in with their children, increased parent involvement in the school, and increased early literacy skills. A 2016 study (Can, 2016) involving 573 parents of students at an international school indicated that the parents viewed the use of a mobile application to connect the school and their homes to be positive and useful. On the other end of the education continuum, Castleman and Page

(2015) found that an intervention implemented with recent high school graduates during the summer before they entered college and during their first year of college had a positive impact on them and was effective in addressing the summer slide issue. These studies suggest that mobile technology could be a beneficial tool used in a variety of implementations serving a variety of purposes.

Technological advances have influenced many changes to the way people communicate. The researchers who conducted one study (Abreu, Rocha, & Cota, 2017), suggest that schools need to be online and must "use electronic resources to develop new forms of communication between schools and families" (p. 835). In their study, they created a questionnaire for teachers and parents from 43 different schools regarding the use of electronic student records versus the use of traditional student records (paper) in order to gather initial opinions about the option to switch to electronic records. Of the 1,300+ respondents, the majority agreed that family-school communications are critical, the current use of the traditional student record is a key communication tool, and that the electronic record could be more beneficial than the traditional record and could improve communications. The researchers conclude that their study illuminates, "the necessity of deepening the potentialities of communication technologies, as they can allow a more open and frequent dialogue between families, schools and communities in order to make the school environment more equitable and able to meet the needs of students, families and communities in a global world" (Abreu et al., 2017, p. 848).

Simulations have emerged as potential technological training tools in many fields. Higher education programs "are at the crossroads of tradition and innovation" (Paz-Albo

Prieto, 2018, p. 102). In Paz-Albo Prieto's study (2018) simulators were used to expose students to real-world situations involving work with families at the preschool level. An example of a scenario presented to students through the simulator is an intake meeting with the educator, mother, and child. Seventy-seven students participated through an electronic questionnaire after engaging with the simulator for 2 hours as part of their semester requirements. Participants found that the simulator enhanced their learning experiences and about 97 % of the respondents felt that the simulator provided an opportunity to reflect about relationships with students' families and build strategies for working with families (Paz-Albo Prieto, 2018, p. 106).

Technology and Parenting

In a broad review (Hall and Bierman, 2015) of 48 studies regarding the application and evaluation of technology-assisted interventions for parents of young children, researchers described the results as identifiers of a major shift from acceptance frameworks to evaluation frameworks. So, rather than studying the acceptance of technologies, the results of this review shows a new focus on studying the impact of technologies. While this article focuses on parents of young children, it is still applicable because as these parents begin to send their children to school, their connections and communications with educators will likely follow the same patterns as with health care professionals. Several of the studies evaluated in this review referenced surveys about materials posted online for parents to view and forms for them to complete. The general findings concluded that around half of all parents involved in various studies preferred

online forms and informational sheets as opposed to printed (Hall & Bierman, 2015, p. 23).

Interestingly, text-based interventions piloted in a number of different studies for varying reasons like treating postpartum depression and providing early intervention for attention-deficit disorders proved to be effective with large numbers of participants. Studies regarding video-conferencing, blogs, and online discussion forums also yielded positive results with parents. Five of the 48 studies analyzed compared face-to-face interventions with online interventions and some benefits technology provided were uncovered, but the researchers suggest that "more research of this kind is needed" (Hall & Bierman, 2015, p. 29). Hall and Bierman (2015) concluded, "the present review demonstrates that there are reasons to think that there is promise in the use of technology-based delivery methods for interventions, yet there are many remaining questions that need to be addressed..." (p. 31).

A 2016 study (Breitenstein, Fogg, Ocampo, Acosta, & Gross) that involved a sample of low-income and ethnic minority parents compared face-to-face parenting program delivery to tablet-based digital delivery. The study found that the completion rate of the tablet program was significantly higher than the attendance of the face-to-face program. The study also found that almost all of the parents reported the program as helpful and claimed that they would recommend the tablet program to other parents. In addition, parenting warmth tripled after the completion of the tablet program.

Another study (Baggett et al., 2017) was designed to test the effects of remote-coaching interventions delivered through the Internet. The randomized controlled, intent-

to-treat trial of an Internet adaptation of an evidence-based infant parenting intervention was implemented in order to allow the researchers to explore engagement and outcomes among 149 at-risk mothers. Overall, the results were positive and more at-risk mothers were able to be reached through this modality than previously used face-to-face methods. Significantly, “for high-risk mothers, those who received more of the targeted intervention showed significantly more observed positive parenting behavior and reductions in child abuse potential as compared to other mothers” (Baggett et al., 2017, p. 321).

The Underutilization of Technology in School, Family, and Community Partnerships

As technology continues to advance rapidly, new opportunities to use technology to foster positive school/family/community relationships will continue to arise regularly. However, studies have shown that technology is not being used to its full advantage to help develop meaningful partnerships. Hohlfeld, Ritzhaupt, and Barron (2010) stated, “few studies have examined how information and communication technology can be used to increase and sustain community and parent involvement” (p. 391) and Downing (2011) states, “no empirical research has been conducted to understand K-12 parents' attitudes about their school district's mass notification service” (p. 93). Another study (Palts & Kalmus, 2015), identified parents’ and teachers’ fear towards using technology to connect with each other and insecurity with digital communication tools as a significant barriers. They suggested, “practical trainings and workshops to enhance teachers’ and parents’ digital literacy skills would be needed to support the partners’ efficient use of

technological tools in fast and dialogic information exchange" (Palts & Kalmus, 2015, p. 77).

Rogers and Wright (2008), found that "parents and teachers are not taking full advantage of technologies to bridge the communication gap and build family-school partnerships" (p. 36). In their study they focused on middle school teachers and parents and looked at quantitative and qualitative data to examine how technology impacted parent engagement at three suburban middle schools. The researchers selected the middle school level for the study because of the drastic communication shifts that take place as a student transitions from elementary school to middle school. They intentionally selected schools that ranged dramatically in demographics, including the percentage of students who qualified for free/reduced lunch. The results of the quantitative portion of the study were quite revealing; "83.3 percent of parents responded that they owned a computer, yet only 35.8% of them reported using e-mail to communicate with a teacher" (Rogers & Wright, 2008, p. 42) and around half of the parents checked their child's school website for dates and/or homework information. In addition, "93.8% of parents indicated cell phone ownership, and only 42.6% reported using a cell phone to contact a teacher" (Rogers & Wright, 2008, p. 42).

Another study (Lewin & Luckin, 2010) aimed to compare two significant implementations in the United Kingdom that focused on technology and family involvement. One project Lewin and Luckin (2010) included in their combined synthesis was a large-scale, long-term study involving 23 elementary schools and five secondary schools. This study was 4 years long and sought to evaluate a grant-funded technological

project that embedded technology throughout an area that was suffering socio-economically to see if changes occurred. In all schools computers were provided to families for students to use at home in different capacities. Some schools provided Internet access, some provided access to an online learning platform, and most provide a type of training or support for technology usage, though the support offered was not streamlined or consistent. Some major implementation and technical issues influenced the success of this project and only some influence was seen regarding parental involvement. In addition, attendance for related events "was disappointing" (p. 755).

The other project Lewin and Luckin (2010) included in their analysis was a short-term, small-scale study in one elementary school seeking to evaluate technology dedicated to improving math instruction in the classroom and in homes. This project included a math technology project that encompassed technological tools to assist with lesson planning, classroom management, homework, parental involvement at home, and communication between teacher/student/parents. The result that was cited for this project was that "parents felt better informed about what was going on in school" (Lewin & Luckin, 2010, p. 755). Both projects included in this analysis helped the researchers conclude that "providing technology and connectivity will not of itself lead to improved parental engagement. Parents require support and effective communication with regards to the best ways in which they can engage with their children's learning in the home" (Lewin & Luckin, 2010, p. 756). Sustainability, how to engage a diverse group of parents and what types of supports are needed with these types of implementations were all key areas the researchers identified as implications for future research. The researchers agreed

that parent/family involvement is an important aspect of education that heavily impacts student achievement.

Hohlfeld et al. (2010) concluded:

> future research needs to look at the relationship between the inclusion of diverse members in the planning process and the changes made in the technology plans. In addition, examination of how information and communication technology is used to support the collaborative planning process would be beneficial to facilitating the mobilization of communities, families, and schools from diverse regions (p. 405).

A large 2016 study (Blau & Hameiri) involving 429 schools and an entire academic school year of data collection yielded interesting results regarding the mobile access of student information systems, particularly relating to looking at student data when accessing databases from mobile devices. The study found that the more teachers accessed the database from mobile devices, the more students and their parents accessed the database from mobile devices. This suggests that teacher modeling is an important aspect to consider when implementing new mobile initiatives and that teacher adoption might influence parent adoption of mobile solutions.

Mobile Technology in the Classroom

As students have begun to enter the classroom environment as digitally-inclined individuals, teachers have begun to adapt their instructional practices to address the different needs of a new kind of student: the digital native. One practice that has become common and continues to expand into school districts across the United States is the one-

to-one strategy. This is a strategy that involves providing each student with a device for their own personal use in order to improve their education, enhance student academic outcomes, and increase the attainment of 21st-century skills (Argueta, Huff, Tingen, & Corn, 2011; Johnson, Adams Becker, Estrada, & Freeman, 2014; Muir, 2007; Swallow, 2015). In order to keep one-to-one costs low, districts and schools are selecting mobile devices, like tablets and Chromebooks, over laptops on a more frequent basis (Ross, 2013; Ting, 2012).

Initially, one-to-one initiatives consistently seemed to meet all stakeholder expectations, however, as implementations moved into year two and beyond, the satisfaction has often declined, districts/schools have abandoned initiatives, and people have outwardly expressed frustration and dissatisfaction with their implemented one-to-one strategy (Bebell & O'Dwyer, 2010; Cullen, Dawson, & DeBacker, 2014; Goodwin, 2011; Hu, 2007; Weston & Bain, 2010). It is clear that the sustainability of these programs becomes an issue after the first year of implementation despite the initial satisfaction reported and the benefits associated with the strategy. This supports the need to conduct thorough studies of initial implementations in order to recommend the appropriate longitudinal or follow-up studies to investigate the long-term sustainability of implementations.

Various higher education studies worldwide concluded with consistent findings regarding the widespread ownership and usage of mobile phones regardless of the schools' locations. These studies suggested that mobile phones are a viable option to utilize for personalizing instruction in a blended learning environment and also for

connecting with students for communication purposes (Kennedy, 2010; Njoku, 2013; Rambe & Bere, 2013; United Nations Educational, Scientific, and Cultural Organization or UNESCO, 2010a, 2010b). Findings from multiple studies supported the notion that students in higher education settings rely on mobile phones for constant communication and social acceptance (Campbell, 2005; Matthews, 2004; Negi & Godiyal, 2016). Udochukwu Njoku (2015) stated, "personal computers are, sadly, out of the reach of many students in most households, especially in developing nations. The ubiquity, acceptability and accessibility of mobile phones today give them the quality to be the central technology for tomorrow's higher education" (p. 142). Despite the increase in the use of technology in the classroom, it is suggested that administrators need to reflect deeply regarding how to integrate mobile technology, in particular, into curricula and into the classroom as an engagement strategy for learners (Keengwe, Schnellert, & Jonas, 2014).

A 2016 study (Rodríguez & Cumming) that investigated the use of iPads with students with language-based disabilities found that the iPad program significantly impacted the sentence-formation skills. The students who used the iPads made significantly more gains with these skills than the students who did not use the iPads. The results of this study suggests that mobile devices could be useful in delivering interventions to some students with disabilities. Another 2016 study (Hagevik & Cherner, 2016) found that using a specific framework for the use of apps as part of an initiative to integrate discipline literacy into classrooms was effective with multiple teachers from different schools.

Another study (Heflin, Shewmaker, & Nguyen, 2017), was designed to be quasi-experimental using student questionnaires, classroom behavioral observation, and a completed written product as data sources. The 159 participants were part of a 4 year college program and were randomly assigned to learning groups: an ad hoc group, a formal group, and a formal group using a mobile application for small group facilitation. The study concluded that, "the results indicate that mobile technology is associated with positive student perceptions of collaborative learning but with increased disengagement by students during class" (Heflin et al., 2017, p. 91). The researchers suggest that mobile applications can be used to facilitate collaborative learning opportunities, but that they also create an opportunity for disengagement.

The Design of the District Mobile Applications

This study aimed to illuminate the experiences of a diverse selection of school districts through interviews with district-level educators from across the country and to ultimately identify trends regarding their implementations and initial use of district mobile applications. Zhang and Adipat (2005) defined mobile applications, or apps, as, "software applications developed for mobile devices" (p. 293). There are various application marketplaces/stores that allow mobile-device users to search for and install applications for free or paid use on their devices. The Apple App Store was opened in July 2008, and a quarter of the 550 apps available at the time were free. Within 3 months, 100 million downloads of the 3000 available apps had taken place. After 4 months, the Google Play Store (Android Market) opened. By July 2013, the Google Play Store had more than 50 billion downloads (Power & Gordon, 2015, p. 442).

District mobile applications are generally available for free through both the Apple and Android stores/marketplaces. This means that individuals using Apple mobile devices or Android mobile devices will be able to download their district mobile application from the application store that comes installed on their mobile devices. Once an app is installed, users will be able to access information, receive push notifications (content is pushed to mobile-device users, the user does not initiate the accessing of the content. (Podnar et al., 2002, p. 563), and send and receive messages to and from district employees. The district mobile applications are designed to provide users access to school-specific and whole-district content. The concept is to provide a one-stop shop for all the information families would need to access regarding the school system and community information connected to the district's mission and goals.

In addition to being a one-stop shop, there are some other key features that make the district mobile applications an attractive option when determining which routes to pursue for family, school, and community communications. Many of the mobile applications offer automatic language translation in many different languages and the translations happen across the entire app, not just in pockets of communication. There is also the option to create anonymous (or not anonymous) tip lines for any topic that the districts choose. This will provide a sustainable opportunity to integrate new two-way communication opportunities into the app once it is downloaded and has a stable user base.

Summary and Conclusions

The literature suggests that technology can have a significant positive impact on parenting and family involvement in student learning, however, it also suggests that technology is underutilized in the area of supporting this type of family, school, and community partnership. As smart devices and the connection to mobile apps continue to increase, additional research could be beneficial to help build an understanding of how families and communities can connect with schools through this modality. I designed this qualitative study to explore district-wide implementations in order to shed light on the topic and add to the body of literature on the topic.

In this chapter, I reviewed problem and purpose of this qualitative interview study. I presented the search terms and search strategy used to find and explore the literature related to this study. I reviewed three theories; UTAUT, the diffusion of innovation theory, and the school, family, and community partnership frameworks that have informed many of the studies presented in the literature review. In the literature review, I looked at research pertaining to the growth of mobile and smart technology, technology as it pertains to: family, school, and community partnerships, parenting, and mobile technology in the classroom, and the underutilization of technology in family, school, and community partnerships. In addition, I presented an overview of the design of district mobile applications to add to the reader's understanding of the type of application that pertain to this particular study. The next chapter includes a description of my role as an interviewer and facilitator of the qualitative study process, the population of the school

districts in the sample, the research design and method, and the data collection and analysis techniques.

Chapter 3: Research Methodology

Introduction

The purpose of this qualitative study was to explore the processes of implementing and rolling out district mobile applications designed as communication tools to connect districts, schools, homes, and communities. Given the gap in the literature, I designed this study to add to the literature informing the field of education about mobile technology implementations that could potentially support parent, family, and community partnerships. This study was also designed to gather information from the perspective of district administrators regarding their experiences with district mobile applications as the front-line individuals overseeing the related processes. Through a survey, interviews, and archival documents, I examined administrator experiences regarding what they expected from their district mobile applications and how they felt regarding whether mobile applications met their expectations. I also investigated how the planning and roll out processes were experienced by these individuals and what major successes and challenges were experienced during implementation and initial usage of the apps. As district administrators with direct oversight of the implementation, roll-out, and initial-use phases of their district's mobile applications, this target participant population gave me the opportunity to shed light on the experiences of the lead people in charge for these specific implementations and the processes associated with implementing a mobile application at the district level. They also were able to identify gaps they experienced in their processes and make informed recommendations for other

administrators considering implementing mobile applications for communication purposes in other districts.

As smart devices and the connection to mobile apps continue to increase, additional research would be beneficial in order to understand how families and communities can connect with schools through this modality; therefore, I developed this study to add to the general knowledge on the topic in order to help build the understanding of experiences in the field. With an increasing number of demographically-diverse people using a variety of smart devices and so much of their time spent using mobile applications, there is a unique opportunity to use district-level mobile applications to connect the school systems with a large number of families and members of the communities. This qualitative study was designed to examine district-wide implementations of mobile applications for communication purposes in school districts in the United States. I examined these implementations through the lens of the administrators responsible for overseeing the processes in order to shed light on the topic and add to the literature on the topic from the perspectives of the front-line individuals who experienced the processes from beginning to end.

Chapter 3 includes a description of my role as an interviewer and facilitator of the qualitative study process, the population of the school districts in the sample, the research design and method, and the data collection and analysis techniques. The research questions were related to the district-level administrators' experiences with the implementation and use of their mobile applications, and I used a series of questionnaires, video conferences and phone interviews, and a review of archival

documents to uncover these experiences. Commonalities and differences that were discovered and illuminated through the data analysis are presented in the findings.

Research Design and Rationale

The central research question and subquestions for this qualitative study were:

What are the experiences of district level administrators regarding the implementation and initial use of mobile applications as communication tools to connect districts, schools, homes, and communities?

1. What did the administrators expect from their mobile app?
2. How did administrators feel regarding whether or not the app met expectations and how would they describe why they feel that way?
3. What were the major successes and challenges of the implementation and initial use of the mobile app, from their perspective?
4. How was the planning process and roll out of the application experienced by administrators?
5. What recommendations would be helpful for other district-level administrators thinking about implementing a mobile application?

In qualitative research, interviewing is often the first data collection tool employed so the researcher can ask participants directly about their perspectives relating to their experiences and gain insight into those perspectives (Starks & Trinidad, 2007). In this study, I used interviewing as the primary data collection technique. An initial round of questions were sent to participants via e-mail in the form of an open-ended questionnaire, from which, I designed a video or phone interview based on individual responses to the electronic questions to personalize the interview for each participant.

I worded the initial electronic questionnaire questions as open-ended, leaving room for interpretation in order to gather unique responses from each participant that were based on their personal experiences with the mobile application. The interview questions were semi structured in order to allow for personalization during the second round of questioning based on the participant responses to the questionnaires. Consecutive interview questions were shaped based on the individual responses to the initial questionnaire and were worded in order to drive participants to think deeper about the questions and respond with additional information. I requested supporting documents for further information related to the individual experiences of each participant.

I used electronic questionnaires sent via e-mail and video conferencing and/or telephone interviews because these were the only feasible way to "complete the interviews within a time specified" (Creswell, 2012, p. 134) and also created an opportunity to interview in an innovative way. Had there not been Internet available to support conducting these interviews through e-mail, video, and phone, I would have been bound to my specific location or a reasonable location to travel to (see Janesick, 2011, p.

149), which would have further limited the study and significantly impacted the trustworthiness of the findings. One round of e-mail questions and a round of video or phone interview questions were ultimately selected for use because these provided the most suitable choice for both me, the participants, and most importantly, the study itself.

With different perspectives come different realities that are constructed by each individual and this ontological perspective fits with "a qualitative approach to encompass a subjective and interpretative study" (Jackson, 2013, p. 52). A quantitative approach would not have allowed me the flexibility and openness required for this study. Using a qualitative approach with a semi structured set of initial questions allowed each participant the opportunity to share a different reality with me, which was necessary in order to illuminate the overall implementation of mobile applications, especially because this is a new phenomenon. In order to address each participant as an individual and construct consecutive questions based on their individual responses, the qualitative data gathered during the first round of questioning was used to inform an individualized approach for the interview round of questioning conducted by video conference and phone.

A quantitative approach would have limited the responses to the questions constructed by me without the foundational knowledge of this type of project and without the literature available to inform me enough to ground a quantitative study. In addition, another form of qualitative study would not have allowed me the flexibility to use open-ended questions through interviews to illuminate individual experiences of each participant and push for deeper thinking and deeper responses, limiting the ability for the

outcomes to potentially inform planning processes and policies regarding mobile applications as well as future research initiatives.

I designed this study to be qualitative in nature, using questionnaires, interviews, and supporting documents to accurately illuminate the experiences and perspectives of a diverse group of administrators responsible for the implementation and roll out of mobile applications. The questions were related to the participants' district use of a mobile application from their own perspective and the data gathered from them provided illuminating information on the topic based on their individual responses.

This data are reported in the data analysis section through a detailed description of the responses gathered during each round of questioning. The selection of this method allowed me to "give a voice to people who are directly affected by social and educational situations, and to encourage researchers to develop a capacity for reflection…" (Hartas, 2015, p. 50). By creating this opportunity, the results of this study add to the literature on the phenomenon of using mobile technology in education and could also be used to assist in driving new research on the topic forward. According to Creswell (2012), "when studying individuals, qualitative researchers conduct a study with the intent of reporting multiple realities...and presenting different perspectives" (p. 20). Through responses from various administrators, different realities and perspectives were discovered, and it was my goal to analyze and present these findings while "developing an increasingly detailed knowledge of the topic being studied (Creswell, 2012, p. 22), illuminate individual experiences, and ultimately compare and contrast responses to potentially identify significant trends in the data.

In this qualitative study, I focused on a new phenomenon in the field of education: The implementation of a mobile application for communication purposes between school districts, families, and communities. I designed the study to understand this phenomenon by seeking to understand the experiences of individuals who have lived the phenomenon (see Creswell, 2007). The varying life experiences of a diverse group of individuals will lead to different perspectives of the phenomenon being studied, which will lead to a bank of foundational information critical to studying this new situation in education. People could experience the same event and view it differently; "daffodils are indeed different for a wandering poet than they are for a hard-pressed horticulturist" (Smith, 2015, p. 13). The experience of using a district mobile app was lived differently by each individual participant. The focus on perspectives through lived experiences, as a method, involves studying a small number of subjects to develop patterns and relationships of meaning (Moustakas, 1994). The implementation of a district mobile app is a new phenomenon and this study was designed to document the experiences of a number of district-level administrators with direct oversight of the implementation and initial use processes interacting with their district mobile applications as well as their perspectives on whether the mobile application has met expectations and what the successes and challenges were. Since there is not a lot of research available regarding mobile technology and family, school, and community engagement, I selected a qualitative approach to provide a means to explore a new topic through the experiences and perspectives of a diverse group of district-level administrators who oversaw the implementation and initial use of their district mobile applications.

I designed the study as a qualitative interview study to examine the experiences of a number of school district administrators who implemented and rolled out mobile applications designed to connect school, home, and the community. While I compared and contrasted responses to identify trends in order to inform recommendations and conclusions, I focused on the experiences of individuals in order to gather accurate unique data from each participant. This approach was selected in order to help describe the phenomenon in-depth and in order to ensure that I did not box-in the participants in regard to their interview responses. I used interviews describing individual lived experiences along with a deep analysis of the experiences of the administrators involved in the study in order to understand their perspective and how they made meaning of the specific situation being studied, based on what previous research identifies as best practices for studies examining new phenomena (Finlay, 2009; Giorgi, 2008; Reid, Flowers, & Larkin, 2005; Starks & Trinidad, 2007). This qualitative interview study involved electronic, video, and phone interview questioning sessions, with supporting data from archival documents requested based on individual responses. The goal for this qualitative study was to use consecutive interview questions to promote deeper thinking and create an opportunity for the researcher to individualize the questions based on the individual responses to the initial questions. The individual responses also provided insight into what types of supporting documents were available and were thus requested after interviewing began.

Role of the Researcher

I served as an interviewer and facilitator of the question-development process for using the qualitative study approach with questions delivered via e-mail, video conferencing, and phone (in two rounds per participant). As an interviewer, there was inevitably a level of subjectivity as I reacted to the responses of the individuals involved in the study since the interviewer was the instrument in the study. While I did bring personal opinions and bias to the situation based on lived experiences, personal career, and opinions, I was able to maintain a certain level of objectivity since I am not a stakeholder directly involved in the administration of any of the district mobile applications involved in the study. I was not previously or directly connected to any of the districts involved in the study either, nor does the success or failure of the project have a direct correlation with my position.

The roles I played in the study were that of facilitator of the question-design process, interviewer, and data specialist. I had direct access to the responses from the participants and designed questions based on their individual experiences and an e-mail connection to the participants was used to deliver the first round of questions while video conference software and telephone were used to deliver the second round of questioning. I had minimal prior contact related to the mobile application with participants, and no participants from districts where I have involvement in were selected to participate. I only had prior contact with the participants in order to solicit their participation and deliver the rounds of questions. I handled data responsibilities that included analyzing results, identifying trends within the data, and developing data-driven consecutive rounds of

questions based on initial responses. While I do meet the criteria presented to participant in this study, myself, I did not refer to my own experiences during any part of the interview process, nor did I refer to my district's mobile application anywhere in my dissertation.

Methodology

In this section, I explain the methodology for this research,. I provide information about the participation selection process, instrumentation, procedures for recruitment, and participation. In addition, I describe data collection, and the data analysis plan.

The questions in this research study were related to the implementation and use of mobile applications and were illuminated through the perspective of district-level administrators responsible for overseeing the implementations. In this study, I used a combination of one e-mail questionnaire and one video conference or phone interview with each participant to uncover experiences and provide insight regarding the research questions. A similar study about technology in the classroom used a questionnaire and an interview with participants and found that "the qualitative data supported the findings from the questionnaire by offering explanations… (Zyad, 2016, p. 72). Other recent studies involving technology in educational settings (Featro & DiGregorio, 2016; Garthwait, 2014; Musungwini, Mugoniwa, Furusa, & Rebanowako, 2016; Ucar & Yazici Bozkaya, 2016) also used a combination of electronic surveys and interviews to gather data and those researchers found this method to be appropriate. Family engagement in yet

another study (Kreider & Raghupathy, 2010) was effectively examined through electronic surveys and phone interviews.

The experiences of the administrators in this study were illuminated through the data collected through an initial electronic questionnaire with an additional round of personalized video or phone interviews with each participant, along with the reports regarding commonalities and differences that were illuminated through the data analysis. A purposive sample of two to 17 participants in this study represented a large population of diverse administrators from a variety of school district across the United States and, therefore, were identified by the researcher based on the demographics of the public school districts in the United States in order to ensure accurate representation of the population. In a number of recent studies (Bektas, 2014; Hosgorur, 2016; Love & Loveland, 2014; McClure, 2016; Moye, Wescott, & Smith, 2017; Preston et al., 2015; Sinclair & Aho, 2018; Temli Durmus, 2016) involving educational leaders/administrators and technology, between two and 17 participants were selected as an appropriate sample size. I designed this study to include a quantity of participants within the justified sample size. I reported the data in the data analysis section through narratives of the individual experiences, results uncovered through an analysis of the text-based data, and analysis of the archival documents retrieved during data collection. The results informed the recommendations and conclusion sections and the overall process also informed these sections.

Participant Selection Logic

A purposive, justified sample of nine participants (the target sample size was the higher end of the justified sample size of between two and 17 individuals) in this study represented a wide ranging population of diverse school districts in the United States, including participants from rural, urban, and suburban districts. The participants were identified based on preselected criteria in order to ensure accurate representation of the population. In a number of qualitative and/or mixed method studies (Bektas, 2014; Hosgorur, 2016; Love & Loveland, 2014; McClure, 2016; Moye, Wescott, & Smith, 2017; Preston et al., 2015; Sinclair & Aho, 2018; Temli Durmus, 2016) involving educational leaders/administrators and technology, between two and 17 participants were selected as an appropriate and justifiable sample size. This study was designed to include a number of participants within this justified sample size, and the target was the higher end of the sample size, in order to include a variety of different perspectives. The first criterion implemented for selection was the position of the participants. Participants were required to be a district-level administrator. The second criterion was that the participant was the individual, or one of the individuals with direct oversight of the implementation and initial use of a district mobile application. Lastly, I intentionally tried to include participants who are diverse in demographics (themselves and the school districts they represent). I identified potential participants who represented different demographics to allow me to gather varying perspectives and to address transferability. A selection of between two and seventeen participants was made based on the number of interested participants and the type of school district they represent. Since the U.S. Public School

System encompasses a range of urban, suburban, and rural school districts efforts were made to ensure that the purposive sample included participants from districts fitting into the definition of urban, suburban, and rural. Nine participants from a wide-range of rural, urban, and suburban school districts in the country ultimately participated.

School district administrators were located through a variety of networks for participation. The two largest mobile applications created for home, school, and community communications have a network of school districts that have implemented apps and that can speak to the experiences of implementation and initial use. I presented the study to these two networks and asked for volunteer participants. The most prevalent national family engagement organization has a database of district administrators who have joined the organization as members. They were invited to participate via e-mail. I had access to the database and was in contact with the organization in regards to the study. The organization also handed out postcards regarding the study at a national conference to find potential participants, shortly after the e-mail invites were sent. In addition, I used the Walden research pool and the Kappa Delta Pi network to invite potential participants to participate. Introductory emails were sent to potential participants from all participant pools that included a summary of the study, participant role and rights, and the electronic questionnaire which included demographical questions about the individuals and their school district, the consent agreement check box, the initial questions for the study, and a statement asking them if they would agree to commit to participate in a phone or video interview. The goal for participation was to be able to engage up to 17 administrators from a variety of school districts across the country. Once

the electronic survey responses came back, I intended to identify a diverse group of participants that represent rural, urban, and suburban schools districts and confirm their participation in the phone or video conference interviews. Due to the limited number of respondents, I invited all nine participants to participate in the phone/video interview phase.

Instrumentation

Data collection instruments in this study included an open-ended electronic questionnaire with a set of interview questions that were the same for all participants. This was sent via e-mail. Personalized interview questions designed based on the individual responses to the open-ended questions on the electronic questionnaire were implemented by phone or video conference. Supportive archival documents (based on each participant's individual experience) were used to support the data gathered through the interviews, as well.

The electronic questionnaire questions in the initial round of surveying were designed as open-ended questions in order to encourage respondents and participants to answer based on their own individual experiences and perspectives. Maxwell (2005) stated that, "unstructured approaches allow you to focus on the particular phenomenon being studied, which may differ from others and require individually tailored methods" and "they trade generalizability and comparability for internal validity and contextual understanding, and are particularly useful in revealing the processes that led to specific outcomes" (p. 80). Unstructured approaches can be desirable, especially in small-scale phenomenological studies, so this approach informed the design of this study through the

use of open-ended questions. In this type of situation, with a new phenomenon, where the researcher is unsure of what the outcomes might entail, a semi structured approach was used in order to allow for a certain openness to the study. This approach was selected in order to allow the situation being studied to drive the study, rather than the driving force of the study set to be pre-determined specifics based on other studies that may or may not end up as appropriate and/or similar. Patton (2015) stated "the design should be understood to be flexible and emergent" (p. 246) when discussing sample sizes, and this statement could be applied to small-scale phenomenological studies, in general, thus a semi structured approach was selected as a convenient option that would allow for flexibility and revisions to occur throughout.

The second round of questions, delivered by video conference or phone were designed to be different for each participant, but were based on the research questions along with the responses to the questions on the electronic questionnaire. The intention during this round of interviews was to help participants think deeper about the original questions on the electronic questionnaire. This study was designed to use a round of open-ended questioning and after the first round of questions, the additional round was designed to guide the participants to think deeper on the topic and gather more in-depth information regarding their individual experiences. I attempted to gather additional relevant information based on the answers to the open-ended questions from the first round of questions. The first round of questions included open-ended questions in order to encourage participants to talk about the topics that are important based on their individual perspectives first. Consecutive rounds of interview questions were designed

based on the initial responses to the open-ended questions and had different focus areas based on each individual experience of the participants and were designed to be reflective of their personal perspectives. The questions were designed to drive participants to think deeper and broader about the topics and to gather additional information from them in order to illuminate as much information about their individual experiences as possible. During the interviews I used the responses to the structured questions in the questionnaire to ask secondary questions depending on how the participants responded individually.

When studying the new phenomenon of a mobile app in an educational setting, leaving some allowance for an unstructured approach gave the researcher the flexibility required to uncover true experiences of participants without skewing that data with too much structure that might box in the results. It is very evident that "different types of interviewing are suited to different situations" (Fontana & Frey, 1994, p. 373). It has been stated by researchers that if people want to fully understand the experience of another person in a specific situation, "we must interview them at length and in depth in an unstructured way" (Fontana & Frey, 1994, p. 373).

The initial round of open-ended questions with a semi structured approach created the opportunity for the researcher to gather accurate data that was used to inform the consecutive rounds of questions that were structured in order to drive the participants to reveal additional information and think deeper on the topic. The openness of questions also allowed me to identify and request archival documents to support the data collected through interviews.

Once the interviews were conducted with all participants, I requested meeting notes/agendas, e-mail threads, marketing materials, reports regarding app usage and downloads, and presentation slides relevant to the specific district implementation and launch of their mobile applications. The individual responses to interview questions provided insight into what types of supporting documents are available and these were thus requested after all interviewing concluded. These documents were used to support the data gathered through the interviews and are included in the narratives of the individual participant experiences. As applicable, the text-based data gathered through the archival document review (relevant to the interviewees' experiences and personal perspective) was uploaded with the interview data to be included in the qualitative data analysis using online software. The archival documents that outlined other pertinent events and included other pertinent information outside of the participant view/perspective was used to support findings and are reported in the narrative, but were not included in the text-based software analysis. That information was relevant to the overall narrative of the mobile application implementations, however, did not necessarily reflect the experiences of the participants, so the documents were used as informational supportive sources, but not used to identify themes and trends or in the comparison of experiences and perspectives.

After the collection of data through the electronic questionnaire and the interviews, I determined what supporting archival documents would support the data gathered. These documents were requested via e-mail and shared by the participants electronically. The individual responses determined what types of documents were

requested; examples that were expected included meeting notes/agendas, marketing materials, reports regarding app usage and downloads, and presentation slides. These documents were used to support the findings reported and were included in the narratives of the individual participant experiences. As applicable, the text-based data gathered through the archival document review that reflected the experiences of the individual participants were uploaded with the interview data to be included in the software analysis.

Procedures for Recruitment, Participation, and Data Collection

An overview of the study, the abstract, my contact information, and the initial questionnaire were e-mailed directly to the administrators of over 100 school districts from across the country. This information was also shared through a variety of networks and listservs. The two largest mobile applications created for home/school/community communications have a network of school districts that have implemented mobile apps. I shared the abstract, my contact information, and the initial questionnaire with the two companies and asked for volunteer participants from their community networks. One of the most prevalent, national family engagement organization also has a database of district administrators who have joined the organization, and those administrators were invited to participate via email and by the organization at their national conference in person using postcards that were handed out at district-administrator networking events. In addition, I used the Walden research pool and the Kappa Delta Pi network to invite participants to participate. After these methods yielded fewer participants than anticipated, I conducted a general search for school districts with mobile applications

designed for communication purposes and I reached out to district administrators with oversight of the mobile apps (as indicated on district websites). These efforts took place over the course of 1 year. The consent form was included in the electronic message and all participants were required to consent prior to moving forward with the electronic questionnaire.

I spent close to 1 year on recruitment efforts to attempt to gather electronic questionnaire responses as the initial phase of data collection. Recruitment of participants presented a major challenge in this study and alternative methods to target participants needed to be employed. I attempted to use a variety of networks for participation and when those avenues resulted in very few participants, I began to reach out to individual administrators after using a Google search for districts using mobile applications for communication purposes. These efforts ultimately resulted in nine responses to the electronic surveys and four of those participants were able to commit to participate in phone interviews. I invited all nine participants to participate in phone interviews on several different occasions over the course of many months, however, only four were able to commit the time to participate.

Recruitment and data collection efforts took place over the course of 1 year from March 2017 through March 2018. Ultimately, nine participants completed the electronic survey during the first phase of data collection. The electronic survey data was recorded in Google using Google Forms and Google Spreadsheets and saved on a secure Google Drive and ultimately downloaded onto a secure hard drive for data analysis.

The electronic survey consisted of 24 fields that participants were asked to complete. The fields on the survey consisted of the following:

- Consent form (one check box)
- District demographics (four multiple choice questions and one open-ended optional comment area for other pertinent information)
- Participant demographics (two multiple choice questions, four required open-ended questions, and one open-ended optional comment area for other pertinent information)
- Research questions (seven required open-ended questions and one open-ended optional comment area for other pertinent information)
- Contact information (three required fields for contact information)

Upon completing the electronic surveys, participants were asked if they could commit to participating in a 30-minute phone or video conference interview and were asked to provide their contact information. The nine participants were contacted via e-mail with opportunities to participate in the next phase of the study over the course of the year that I spent in the data-collection phase of the study. Four participants ultimately committed to the next phase and were interviewed; three via telephone and one via video conference for the second phase of data collection. The four participants who were interviewed via telephone/video conference software participated in a 30-minute phone call/video conference each. The data collected during phone interviews was recorded using the Voice Memos app on a handheld device and Zoom video conferencing, written notes taken during the calls, and upon completion, each voice recording was transcribed.

Archival documents were requested and included in the data analysis in order to assist with the collection of information regarding the general process of planning, implementing, rolling out, and supporting district mobile applications and to support the data collected through the interviews with participants. The documents requested included email threads, news articles, district announcements about mobile applications, and website pages. According to Yin (2011), using documents can help researchers confirm details of participant experiences so that time is not wasted during interviews asking about specific language used in communications, dates, spelling, etc. Yinalso stated "the collected objects can reduce the problems and challenges of reflexivity. These objects were created for some reason other than your inquiry and cannot be said to have been influenced by your inquiry." (p. 150). In this study, archival documents were used to both clarify details shared during the interview process and to support the data gathered from participants during interviews. The final documents that were received and included in the study were: five e-mail threads, two news articles, four district announcements about mobile applications, and three website pages detailing instructions on how to download and use mobile applications.

Data Analysis Plan

The interview data was organized first by individual response so I could explore the narratives of each individual experience, and then text was analyzed to uncover themes. The interview responses to the open-ended questions delivered through the electronic questionnaire, and the video conference/phone interview transcripts were uploaded into Nvivo, which is a web-based software providing users the opportunity to

organize and analyze qualitative, unstructured, text-based data. In addition to interview responses, the other unstructured, text-based data that was gathered through document artifact reviews was also uploaded into Nvivo so that data could be included in the organization of codes, categories, and themes, and data analysis. After the collection of data through the electronic questionnaire and the interviews, I determined what supporting archival documents would effectively support the data gathered. These documents were requested via e-mail and shared by participants electronically. The individual responses determined what types of documents were requested; examples that were expected to inform the qualitative interview data included meeting notes/agendas, marketing materials, reports regarding app usage and downloads, etc. These documents were used to support the findings reported and were included as informational items in the narratives of the individual participant experiences. As it was determined to be applicable, the text-based data gathered through the archival document review was uploaded with the interview data to be included in the software analysis. The data sets were also organized according to the commonalities that were discovered so that emerging themes could be illustrated accurately. The discrepant data that was discovered through data analysis is included in the analysis and the details of the discrepant data is described. Through the software, I used word repetition and keywords to begin analyzing the text to identify trends. Manually, I compared and contrasted the data to further identify trends. The codes used to categorize the data were a hybrid of both preset and open based on the nature of the study. The preset codes were related to the research questions (successes, challenges, expectations, etc.), and as it was expected, new codes

emerged and existing codes needed to be revised to illuminate and highlight the new codes that emerged as a result of the data analysis.

Grouping occurred based on participant responses, and also based on emerging data trends. There were significant connections between participant experiences and these are described, as well. Ultimately, the most significant trends were identified and the areas within the questions that did not illuminate significant trends were identified and reported, as well. The data is presented both by individual response, results from comparing and contrasting data points, and grouped by trends that emerged. Looking for relationships within the different contexts of each interview in order to make connections and form relationships between the separate responses could help bring the data together to form a consistent and clear combination of diverse interviews (Maxwell, 2005, p. 98).

The open-ended data gathered in this study was recorded as individual responses representing the experiences of each individual participant. The main focus of the first part of the data analysis was the individual responses to the questions in order to uncover the unique experiences of each participant. However, efforts were made to uncover data trends through comparing and contrasting data points by question and by identifying emerging trends and themes. The goal of the study was to illuminate individual experiences, compare and contrast responses, and to identify trends, so the outcomes depended significantly on which particular areas within the questioning illuminated trends and which items did not. After the data was analyzed, I shared the results and the analysis with two peer reviewers to vet the conclusions with additional individuals before the final recommendations and conclusions were finalized. Discrepant data is reported in

the data analysis section as well as in the conclusion section. According to Maxwell (2012), “in particularly difficult cases, the best you may be able to do is to report the discrepant evidence and allow readers to evaluate this and draw their own conclusions” (p. 112).

Issues of Trustworthiness

Specific measures were taken to address issues of trustworthiness that are common with qualitative research. In particular, issues related to studies involving interviews as the primary data collection method were addressed. In the next section I will provide detailed information regarding the measures I tool to address issues of trustworthiness.

Credibility

The data sources in this study included open-ended interview responses and supporting documents as deemed appropriate and each individual participant based on the responses gathered through interview questioning. Electronic surveys, e-mails, reporting features, etc. made possible through technology advances “open up further possibilities of triangulation with traditional types of data” (Flick, 2004, p. 179) and efforts were made to collect appropriate supporting documents based on individual responses to interview questions. After the collection of data through the electronic questionnaire and the interviews, I determined what type of supporting archival documents would support the data gathered. These documents were requested via e-mail and shared by participants electronically. The individual responses were used to determine what types of documents were requested; examples that were expected to be included were meeting notes/agendas,

marketing materials, reports regarding app usage and downloads, etc. These documents were used to support the findings reported and were included by informing the narratives of the individual participant experiences.

Two peer reviewers with more than 20 years in the field of education were asked to assist with ensuring that this study meets high standards regarding rigor, consistency, and accuracy. The peer reviewers were selected because of their experiences as both classroom teachers and administrators. Both have been in the field of public-school education for over 20 years and currently still work in the field. The two peer reviewers hold doctoral degrees, as well. Both are my current colleagues and have committed to reviewing this research study to offer honest and constructive feedback. Since both reviewers are colleagues of mine, there is the potential for their reviews to be biased. Reviewer bias, in many forms, is a concern for many professional journals and researchers so research-based techniques will be used in this study to reduce reviewer bias. Resnik and Elmore (2016) suggested incorporating anonymity into the review process and providing guidelines to reviewers. In this study, I provided the reviewers with anonymous feedback forms through Google Forms so they were able to provide their comments anonymously and I also provided them with a number of documents regarding good reviewing practices and responsibilities of peer reviewers.

Involving the peer reviewers helped reduce bias, along with the appropriate acknowledgement of researcher biases that are present and influential. According to Maxwell (2005) “asking others for feedback is a valuable way to check your own biases and assumptions and flaws in your logic or methods” (p. 112). In addition, I set up the

opportunity for multiple rounds of interviewing (one through an online questionnaire and one via phone or video-conferencing software) and e-mail communication with each participant to maintain a significant amount of contact with each participant.

Transferability

Considering demographics of school districts and individual participants when selecting participants for participation contributed to addressing trustworthiness efforts by including as many diverse perspectives as possible, given the limitations of the study. By design, this study sought to investigate mobile application implementations at a variety of school districts. This includes whether they are urban, suburban, or rural and their size as identified by the number of students they serve annually. The school district information and demographics were used to identify how diverse of a sample was included in this study. A purposive sample of between two and 17 individuals in this study represents administrators from a wide-range of diverse school districts in the United States. The participants were identified based on preselected criteria in order to ensure a diverse representation of the population of rural, urban, and suburban school districts in the United States. The first criterion implemented for selection was the position of the participants. Participants invited to participate were identified as district-level administrators. The second criterion is that the participant was the individual, or one of the individuals with direct oversight of the implementation and initial use of a district mobile application. Lastly, I attempted to include participants who represent urban, rural, and suburban school districts ranging in demographics based on the information they self-reported in the electronic questionnaire and information online about the school

districts the participants represent. I identified potential participants who represent different a variety of demographics to allow me to gather varying perspectives and to address transferability. The demographics of the selected participants are described in the data analysis section and charts are included to show the demographical information about the school districts included in the study. The results were written in a way that was meant to accurately represent each individual participant's experience, and to compare and contrast the experiences of the nine individuals. The interviewees were given the opportunity "to comment on the results and whether the final themes and concepts created adequately reflect the phenomena being investigated" (Noble & Smith, 2015, p. 34), as well, when I shared the final study with each participant.

Dependability

I maintained a clear trail of all data in order to help me remain consistent and transparent with the information gathered. Since the responses of individuals during interviews prompted the requests for supporting documentation and informed the consecutive rounds of interview questioning, this process was clearly recorded and shared. Triangulation was made possible through additional round of questioning with multiple participants and the addition of supporting documentation in the form of archival documents as deemed appropriate and each individual participant depending on what was uncovered during interviews.

Confirmability

I continually reflected regarding oneself and the connection between the self and the research. The peer review process helped address issues that could have presented

based on my formation of questions and my response to interviewee experiences. Two peer reviewers with more than 20 years in the field of education were asked to assist with ensuring that this study meets high standards regarding rigor, consistency, and accuracy and volunteered to review any part of the study throughout the process. Using electronic interviews to begin also assisted with this process since I had a significant amount of time to mentally process the responses prior to forming the next rounds of questions. By having time between rounds of questioning, I had time to manage reactions and think about personal bias, assumptions, and/or preconceived notions that may have impacted the formation of questions. I also had time to present the additional questions to peer reviewers prior to disseminating them to ensure that they were worded appropriately.

Ethical Procedures

The privacy of the participants and schools involved in this study remain anonymous in all documentation in order to ensure that the people involved are protected. No identifiable information is included in any of the documentation in this dissertation. There was complete transparency about how I planned to use the data gathered during the study so that the participants had all the information about their involvement in the study prior to participating. . Participants were given an informed consent form to sign electronically. All participants were given the opportunity to withdraw from the study at any time, and were made comfortable to do so, if they desired to at any point in time. Participants had the opportunity to end their involvement at any time, and participants were able to exit their interview at any time. Data will be maintained on a secure drive for 5 years and permanently deleted after the 5 years have elapsed in order to protect the

privacy of the participants. The final version of this dissertation will reference Walden University's IRB approval number.

Summary

This study was designed as a qualitative interview study so I could accurately illuminate the experiences and perspectives of a small group of district-level administrators representing diverse school districts related to their use of a mobile application. The experiences of administrators are illuminated through the data collected in interviews, along with the resulting analysis, and trends that emerged. In this study, I attempted to find participants from rural, urban, and suburban school districts in the United States and are represented through the purposive sample. It is recommended that future studies include a broader representation of the school districts across the country. While rural, urban, and suburban experiences are represented in this study, the sample size was limited. I planned to identify potential participants who differed in individual demographics, as well, in order to allow me to gather varying perspectives. I reported the data in the data analysis section through comparing and contrasting narratives of the individual experiences of each participant. The responses to the individual questions and the data trends that emerged significantly informed the recommendations and conclusion sections.

Chapter 4: Results

Introduction

The purpose of this study was to explore and understand the experiences of implementing and rolling out a district mobile application designed as a communication tool to connect districts, families, and communities. I designed the study so I could examine these experiences from the perspectives of the individuals with oversight of the related processes, a group of district-level administrators from across the country who represent a diverse sample of school districts. Once information was gathered from the participants, their experiences were compared and contrasted to identify trends and themes regarding their implementations and initial use of district mobile applications. The study was also designed to add to the literature informing the field of education about mobile technology implementations that could potentially support parent, family, and community partnerships. By engaging front-line professionals with oversight of the implementations, I wanted to gather information regarding what administrators expected from the mobile applications and how they felt regarding whether mobile applications met their expectations. I also focused on how the planning and roll out processes were experienced by the participants and what major successes and challenges were experienced during implementation and initial usage of the apps.

As smart devices and the connection to mobile apps continue to increase, additional research could be beneficial to understand how families and communities can connect with schools through this modality. There is a significant gap in the literature regarding how mobile technology could be used as a communication tool to potentially

impact family, school, and community relationships (Lewin & Luckin, 2010; Rogers & Wright, 2008; Thompson et al., 2015). It appears that mobile technology will continue to grow and be adopted on a broader, wider scale across the globe (Banupriya et al., 2015; Payal & Kumar, 2014; Stoyanov et al., 2015), so I designed this study to add to the knowledge base regarding the intersection between home, school, and community partnerships in the education sector and the mass adoption of mobile technology worldwide.

Multiple studies have concluded that technology is not always used to its full advantage to help develop meaningful partnerships between schools, homes, and the community at large and that further research would be useful to evaluate how technology can be used to strengthen partnerships (Lewin & Luckin, 2010; Rogers & Wright, 2008; Thompson et al., 2015). In this qualitative study, I explored district-wide implementations through the lens of the administrators in order to shed light on the topic and add to the literature on the topic.

The central research question and subquestions for this qualitative study were:

What are the experiences of district level administrators regarding the implementation and initial use of mobile applications as communication tools to connect districts, schools, homes, and communities?

1. What did the administrators expect from their mobile app?
2. How did administrators feel regarding whether or not the app met expectations and how would they describe why they feel that way?

3. What were the major successes and challenges of the implementation and initial use of the mobile app, from their perspective?
4. How was the planning process and roll out of the app experienced by administrators?
5. What recommendations would be helpful for other district-level administrators thinking about implementing a mobile application?

Chapter 4 includes a description of the setting and the demographics of the participants. The chapter also includes data collection details and an analysis of the data collected. I conclude the chapter with evidence of trustworthiness and the results of the study as related to the research questions.

Setting

In this study, I collected data from nine participants through an open-ended electronic questionnaire. Five participated exclusively in the electronic survey and four participants completed an additional semi structured phone or video conference interview (i.e., three via telephone and one via video conference). Supporting documents from the four participants who participated in the additional interview were also provided electronically through e-mail. The supporting documents that were received and included in the study were: five e-mail threads, two news articles, four district announcements about mobile applications, and three website pages detailing instructions on how to download and use mobile applications. The participants represented a wide range of school districts from across the United States and were all administrators who played a key role as the individuals overseeing the process of planning, implementing, rolling out,

and monitoring initial usage of mobile applications in their districts. During the time of this study, the administrators who participated worked in school districts in New Mexico, Pennsylvania, Connecticut, Wisconsin, New York, Missouri, and North Carolina.

Due to the timing of the study, I implemented the data collection tools during a particularly busy time in the school year. This may have had an impact on participants' availability and time they were able to dedicate to participation. Administrators deal with a variety of responsibilities throughout the school year, including budgets, personnel changes, and other inevitable conditions, which could have also been influential during data collection. Despite these possible conditions, the subjects who committed to participating in the electronic phase of the study were able to complete the survey. Additionally, all the participants who were selected for interviews were able to engage in phone interviews or video conference interviews for the entire 30 minutes. None of the participants disclosed any information regarding their personal or professional conditions that would have played a role in the research results.

Demographics

Nine different school districts were represented in the study. Three districts were identified as rural. Four districts were identified as suburban. Two districts were identified as urban (see Figure 1).

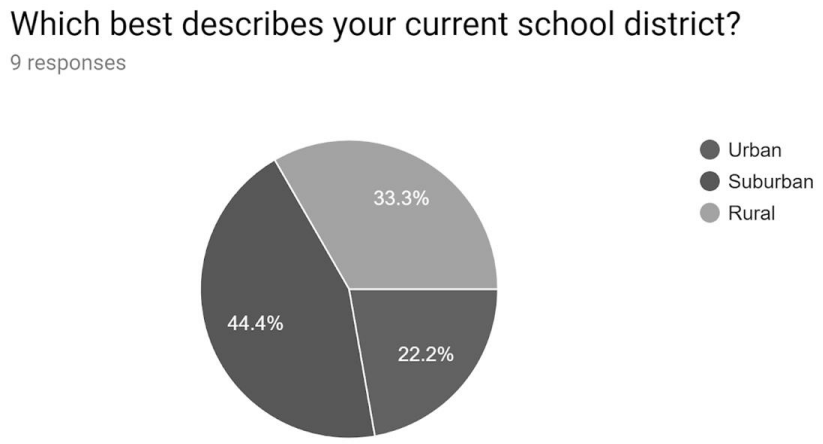

Figure 1. School district demographics. This figure shows the range of urban, suburban, and rural school districts represented in the study.

The number of students served annually by each of these nine districts varies. As represented in Figure 2, the ranges span from 250–999 to over 10,000. As shown in the figure the districts vary and only one participant identified that their districts serves less than 250 students.

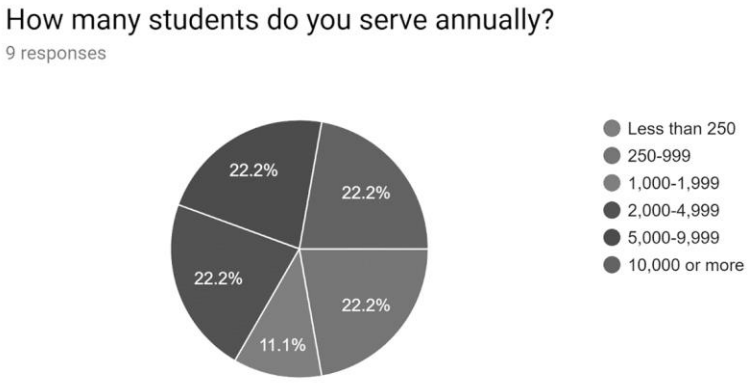

Figure 2. Students served by school districts annually. This figure illustrates the number of students served by each district represented in the study.

I asked participants about the socio-economic status of the families they serve. Figure 3 illustrates how many students within their student population qualify for free/reduced lunch prices. Almost half of the participants indicated that their districts have 50-74% of students who qualify for free/reduced lunch.

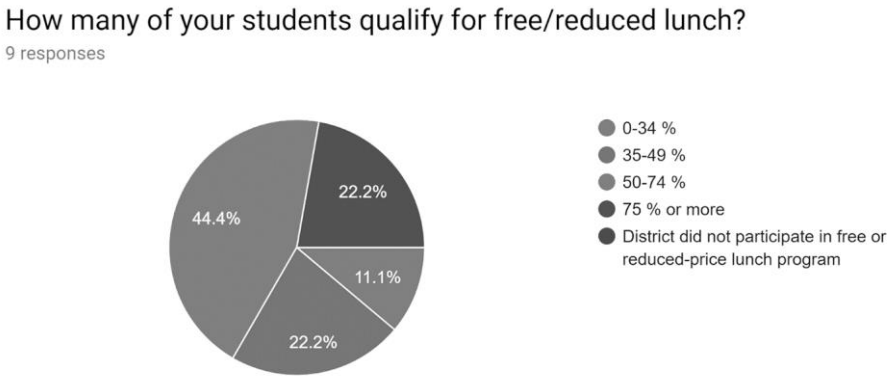

Figure 3. Percentage of students that qualify for free/reduced lunch prices. This figure illustrates that two respondents indicated that 75%+ of their students qualify, four indicated 50%–74%, two indicated 35%–49%, and one indicated 0%–34%.

Each participant was also asked how long they have worked in their current district. Almost all of the respondents indicated that they have worked for their current district for more than 7 years (see Figure 4). Very few participants were new to their districts.

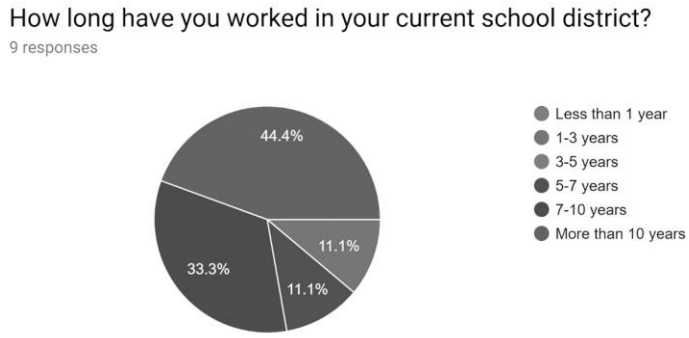

Figure 4. How long administrators worked in their districts at the time of this study. This figure shows length of time in years for each participant.

The participants were also asked about their personal demographics. See Figure 5 for gender responses. There were more females than males who participated.

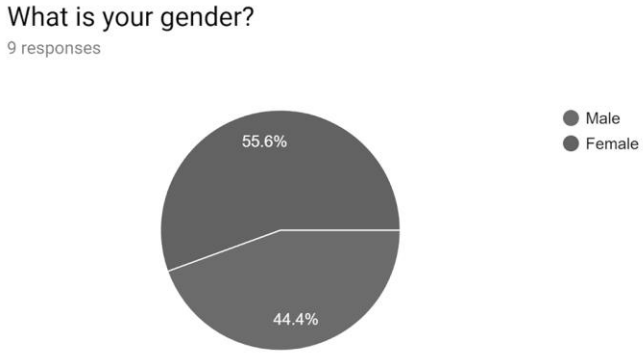

Figure 5. Gender of participants. This figure illustrates the gender of the participants.

All nine participants were born in the United States, identified as White/Caucasian. All participants indicated that they speak English as their primary language. See Figure 6 for age responses.

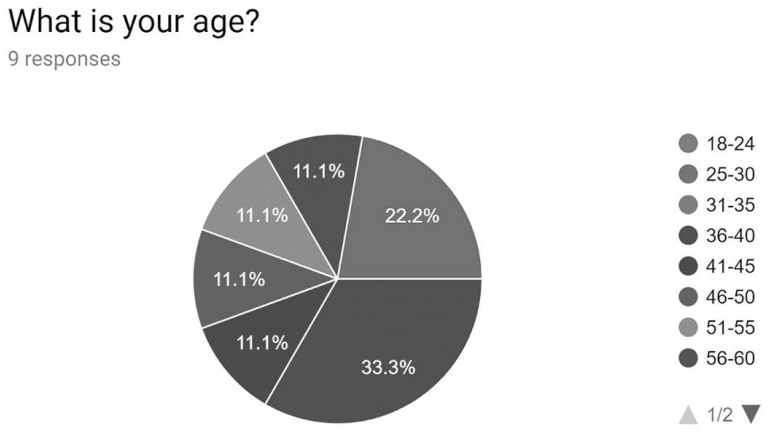

Figure 6. Age of participants. This figure illustrates the age of each study participant.

The participants identified a number of different companies as those that produced and/or designed their district mobile applications. The following companies were identified:

- Parentlink/Blackboard (four respondents);
- Self-designed (two): One district administrator indicated, “we did it ourselves” and one indicated, “the app was developed at our regional HS in the IT cohort by students in support of their capstone project;”
- Facebook (one);
- Text4Baby (one); and
- Custom Schools Apps (one).

Data Collection

After I obtained IRB approval (Approval # 03-15-17-0366007), participants were identified through a variety of networks including national and local organizations focused on school, family, and community partnerships. I recruited participants for the study through e-mail communications. In the initial outreach, I included the electronic survey with the consent form, the abstract of the study, and a brief overview of the data collection processes. The two largest mobile applications created for home, school, and community communications have a network of school districts that have implemented mobile apps. I shared the abstract, my contact information, and the initial questionnaire with the two companies and asked for volunteer participants from their community networks. One of the most prevalent national family engagement organizations also has a database of district administrators who have joined the organization, and those administrators were invited to participate via e-mail and by the organization at their national conference in person using postcards. In addition, I used the Walden research pool and the Kappa Delta Pi network to invite members of those groups to participate. After these methods yielded fewer participants than anticipated, I conducted a general search for school districts with mobile applications designed for communication purposes, and I reached out to district administrators with oversight of the mobile apps. Throughout the last phase of recruitment, an overview of the study, the abstract, my contact information, and the initial questionnaire were e-mailed directly to the administrators of over 100 school districts from across the country. These efforts took place over the course of close to 1 year. I spent 1 year on recruitment and data collection

efforts to attempt to gather electronic questionnaire responses as the initial phase of data collection. Recruitment of participants presented a major challenge in this study, and alternative methods to target participants needed to be employed.

Ultimately, nine participants completed the electronic survey during the first phase of data collection. The electronic survey data were recorded in Google using Google Forms and Google Spreadsheets. The electronic survey consisted of 24 fields that participants were asked to complete. The fields on the survey consisted of the following:

- Consent form (i.e., one check box);
- District demographics (i.e., four multiple choice questions and one open-ended optional comment area for other pertinent information);
- Participant demographics (i.e., two multiple choice questions, four required open-ended questions, and one open-ended optional comment area for other pertinent information);
- Research questions (i.e., seven required open-ended questions and one open-ended optional comment area for other pertinent information); and
- Contact information (i.e., three required fields for contact information).

Upon completing the electronic surveys, participants were asked if they could commit to participating in a 30-minute phone or video conference interview and were asked to provide their contact information. The nine participants were contacted via e-mail with opportunities to participate in the next phase of the study over the course of the year that I spent in the recruitment and data-collection phase of the study. I invited all nine participants to participate in phone interviews on several different occasions over the

course of many months, however, only four were able to commit the time to participate. The participants were interviewed for 30 minutes each; three via telephone and one via video conference for the second phase of data collection. Before conducting the phone/video conference interviews, I printed each individual's responses to the electronic surveys and noted areas where clarification and/or additional information would be beneficial. The four participants who were interviewed via telephone/video conference software participated in a thirty minute phone call/video conference each. The data collected during phone interviews was recorded using the Voice Memos app and Zoom video conferencing, written notes taken during the calls, and upon completion, a typed transcript of each voice recording. The questions from the electronic survey were used as guiding questions for the phone/video conference interviews and the conversations were semi structured, but open-ended enough to allow for experiences to be accurately represented.

Archival documents were requested and included in the data analysis in order to assist with the collection of information regarding the general process of planning, implementing, rolling out, and supporting district mobile applications and to support the data collected through the interviews with participants. The documents requested included e-mail threads, news articles, district announcements about mobile applications, and website pages. According to Yin (2011), using documents can help researchers confirm details of participant experiences so that time is not wasted during interviews asking about specific language used in communications, dates, spelling, etc. Yin also states "the collected objects can reduce the problems and challenges of reflexivity. These

objects were created for some reason other than your inquiry and cannot be said to have been influenced by your inquiry." (p. 150). In this study, archival documents were used to both clarify details shared during the interview process and to support the data gathered from participants during interviews. The final documents that were received and included in the study were: five e-mail threads, two news articles, four district announcements about mobile applications, and three website pages detailing instructions on how to download and use mobile applications.

Data Analysis

The process that was implemented in this study to analyze the data followed the steps as presented in *Qualitative Research from Start to Finish* by Yin (2011). Before coding the data, the text-based data associated with participant experiences and perspectives (responses to the questions on the electronic questionnaire, participant responses to questions from interview transcripts, and data from archival documents) was compiled into one document per participant, identified as P1-P4, so the text could be uploaded into Nvivo and organized in a clearer way by separating each user record into different files (Yin, 2011, p. 184). The participants who only completed the online questionnaires are identified as P5-P9.

In order to begin the first level of coding, these separate files were then uploaded into Nvivo to assist with identifying Level 1 and Level 2 codes. Level 1 codes were identified with the help of a word-frequency query to quickly narrow down the words that participants used the most when responding on the questionnaires, during interviews, and in text-based archival documents (specifically relating to participant experiences). As the

first level of coding took place it was important to begin thinking, "of ways that some of the Level 1 codes relate to each other, and the next goal was to move incrementally to an even higher conceptual level by recognizing the categories within which the Level 1 codes may fall" (Yin, 2011, p. 188). After the Level 1 codes were identified, the category codes were identified (see Table 1 for codes and categories).

While organizing the codes and categories it was important to think about applying the codes and categories to the research questions and to use them to help identify new themes and trends about the study topic (Yin, 2011, p. 191). The approach to organize codes and categories as they relate to the study questions and new insights into the topic is revealed in this chapter as the data were presented. Once the first two levels of coding was completed, the data were organized into emerging themes for each category by reading through responses and categorizing the text manually. See Table 2 for an illustration of themes by category.

The nine electronic survey responses were coded by hand before uploading them with the larger data set, due to the small number of responses. After the themes were identified through the process indicated in the beginning of Chapter 4. Each question was individually analyzed and the results are presented by question. The process used to analyze the answers to each question encompassed the coding of each of the nine responses to each individual question, then moving the responses into larger representations of emerging themes as presented earlier in the chapter. The responses to the survey questions were uploaded into Nvivo so that the responses were included in identifying emerging themes and categories with the data from the phone interviews and

archival documents. After each of these processes were completed, the results were compiled into one list of emerging themes and categories for all the data collected overall (See Table 2). Themes emerged for each research question and are highlighted in Table 3 and further described in the remaining sections of the chapter.

Codes and Categories

The codes that emerged from the data, when looking at the word frequency list included:

- Families
- parents
- school
- students
- information
- district
- access
- community
- data
- communication
- integration
- technology
- staff
- time
- cost
- data
- info
- phones
- website
- support
- system
- options
- design
- ease
- responsible
- team
- download
- features
- tech
- engagement
- functionality

These codes were organized into five categories. The five categories include: stakeholders, integration, content, communication, and planning. See Table 1 for a visual presentation of codes and categories.

Table 1

Categories and Codes

Stakeholders	Integration	Content	Communication	Planning
Families	Website	Functionality	School	Time
Parents	Technology	Information	District	Cost
Students	Data	Design	Access	Support
Staff	Features	Options	Download	Ease
Community	System			Responsible
Team	Phones			
Engagement				

Table 2

Themes by Category

Stakeholders	Integration	Content	Communication	Planning
Families are the target stakeholder group for the district mobile applications	Integration with existing systems/data sources is a key consideration	Supplying mobile applications with content, initially, was a key area of focus	Marketing the availability of mobile applications is important to the implementation processes	Participants felt solely responsible for owning the planning processes associated with mobile app implementations
Engaging representative groups of stakeholders throughout the implementation process is recommended		Keeping the content in mobile applications relevant and up-to-date was important	Parent portal features was an area of concern, specifically around communicating login info to families	

Table 3

Themes by Research Question

RQ1	RQ2	RQ3	RQ4	RQ5
It is assumed that mobile applications will connect families with information from the district and allow families to access the content they want/need It is expected that mobile applications will integrate with existing systems	Mobile applications were found to be successful in providing a platform where families could access information Ongoing work is needed in order for apps to be considered fully implemented	Challenges that districts experience with implementing mobile applications largely involve connecting apps with existing systems and data sources Successes districts experience include quick implementations and early adoption by families	Administrators felt pressured as the sole responsible parties for overseeing app implementations	Engaging a representative group of stakeholders throughout all aspects of the work associated with the implementation, roll out, and initial launch of the mobile applications is recommended

Evidence of Trustworthiness

Credibility

The data sources in this study included open-ended interview responses and supporting documents as deemed appropriate and each individual participant based on the responses gathered through interview questioning. Electronic surveys, e-mails, reporting features, etc. made possible through technology advances "open up further possibilities of triangulation with traditional types of data" (Flick, 2004, p. 179) and efforts were made to collect appropriate supporting documents based on individual responses to interview questions. After the collection of data through the electronic questionnaire and the interviews, I determined what supporting archival documents would support the data gathered. These documents were requested via e-mail and shared electronically. The individual responses determined what types of documents were requested. The final documents received included: five e-mail threads, two news articles, four district announcements about mobile applications, and three website pages detailing instructions on how to download and use mobile applications.

Two peer reviewers with more than 20 years in the field of education assisted with ensuring that this study met high standards regarding rigor, consistency, and accuracy. The peer reviewers were selected because of their experiences as both classroom teachers and administrators. Both have been in the field of public-school education for over 20 years and currently still work in the field. The two peer reviewers hold doctoral degrees, as well. Both are my current colleagues and have reviewed the

study a number of times and provided honest and constructive feedback. Since both reviewers are colleagues of mine, there is the potential for their reviews to be biased. Reviewer bias, in many forms, is a concern for many professional journals and researchers so a couple research-based techniques will be used in this study to reduce reviewer bias. Resnik and Elmore (2016) suggested incorporating anonymity into the review process and providing guidelines to reviewers. In this study, I provided the reviewers with opportunities to provide anonymous feedback so they could provide their comments anonymously.

Involving the peer reviewers helped reduce bias, along with the appropriate acknowledgement of researcher biases that are present and influential. According to Maxwell (2005) "asking others for feedback is a valuable way to check your own biases and assumptions and flaws in your logic or methods" (p. 112). In addition, I attempted to conduct multiple rounds of interviewing (one through an online questionnaire and one via phone or video-conferencing software) and maintain a connection via e-mail with each participant to maintain a significant amount of contact with each participant.

Transferability

While the study was bound by the previously indicated limitations, I was intentional when recruiting participants. I made many attempts to include diverse perspectives representing a variety of demographics, both individual and in regards to the communities the participants serve. Because of the small number of respondents to the survey, I was able to extend the opportunity to participate in the interview round to all of

the respondents. A purposive sample of between two and seventeen individuals was agreed upon for this study that would intentionally represent a diverse school districts in the United States (rural, urban, and suburban). The first criterion implemented for selection was the position of the participants. Participants needed to be a district-level administrator. The second criterion was that the participant was the individual, or one of the individuals with direct oversight of the implementation and initial use of a district mobile application. Lastly, the participants were asked to participate because they represented a rural, urban, or suburban school district in the United States. I attempted to identify potential participants who represented different demographics to allow me to gather varying perspectives and to address transferability. The demographics of the selected participants were described in the survey result section. The interviewees were given the opportunity "to comment on the results and whether the final themes and concepts created adequately reflect the phenomena being investigated" (Noble & Smith, 2015, p. 34), as well, when I shared the final study with the participants via e-mail.

Dependability

A clear trail of all data was maintained in order to help me remain consistent and transparent with the information gathered. Since the responses of individuals during survey data collection prompted the requests for supporting documentation and informed the consecutive rounds of interview questioning, this process was clearly recorded and shared. Triangulation was made possible through additional rounds of questioning with multiple participants and the addition of supporting documentation in the form of archival

documents as deemed appropriate and each individual participant depending on what was uncovered during interviews.

Confirmability

Throughout the time I was personally engaged in the process of conducting the research for this study, I thought about my connection to the research because of my experiences in the field of education and my beliefs about the work. I thought about how my biases might impact my research and was honest with myself about this when reflecting. Reflection is an important part of conducting research. Jootun, McGhee, and Marland (2009) stated, "reflecting on the process of one's research and trying to understand how one's own values and views may influence findings adds credibility to the research and should be part of any method of qualitative inquiry" (p. 42). The peer review process helped address issues that could have presented based on my formation of questions and my response to interviewee experiences. Two peer reviewers with more than twenty years in the field of education assisted with ensuring that this study meets high standards regarding rigor, consistency, and accuracy and have volunteered to review any part of the study throughout the process. Using electronic interviews to begin also assisted with this process since I had time to mentally process the responses prior to forming the next rounds of questions. By having time between rounds of questioning, I had time to manage reactions and think about personal bias, assumptions, and/or preconceived notions that may impacted the formation of questions. I also had time to

present the additional questions to peer reviewers prior to disseminating them to ensure that they were worded appropriately.

Results

General overarching themes emerged across research questions. The first theme that emerged is that families were the target stakeholder group intended to be reached through the implementation of district mobile applications. Overwhelmingly, the responses to all questioning circled back to the impact that implementations had on communications and district connections with families. Another theme regarding stakeholders that emerged was the recommendation to involve a diverse representative group of stakeholders throughout the processes associated with mobile application implementations. It was referenced multiple times that stakeholders were not engaged in the processes, but that they should have been. The participants recommended involving diverse representative stakeholders in future mobile application implementations, and identified this as something they would change if they were to engage in the process over again. During questioning, this came up frequently, especially when discussing planning that occurred prior to implementations. A theme that emerged regarding integration was the importance of focusing on the integration of new mobile applications with existing systems and data sources. This came up during questioning across research questions and was particularly relevant when discussing challenges that participants experienced throughout the related processes. In addition, participants referred to integration frequently when talking about expectations they had for their applications and the overall

functionality of the apps. Connected to integration, content-related themes emerged across research questions. The initial content supplied to the mobile applications through integration with existing systems and data sources was a key consideration that participants referenced frequently. Additionally, when discussing challenges and future plans, participants regularly mentioned keeping content relevant and updated. Communicating the availability of the mobile applications presented as a theme across research questions and getting parent login information out to families was a significant area of concern for participants. When asked about planning processes, rollout, and successes/challenges, communications around these topics were brought up frequently. Overall, a significant theme that emerged was that participants felt solely responsible for overseeing the processes associated with the implementation of mobile applications and viewed this as problematic. This was referred to frequently during questioning and the participants mentioned the pressure felt as the sole individuals responsible and the need to engage stakeholders in the processes in order to include feedback from a variety of perspectives. The detailed results and supporting information was organized by research question. Within each research question results, these themes are presented, in detail.

Research Questions

What were the experiences of district-level administrators directly responsible for overseeing the implementation and initial use of mobile applications during the implementation and initial use phases of their district mobile applications?

Research Subquestion 1

What did the administrators expect from their mobile app? When organizing the data associated with this question into categories, stakeholders emerged as the prevalent category with 51% of the responses. Integration was illuminated with 28% of the responses and content with 20% of the responses. There was one response that is considered discrepant.

Stakeholders. Families were the target stakeholder group for the district mobile applications and the reasoning behind all of the implementations was to reach the target audience. Participants expected their apps to allow them to reach more parents. Administrators' expectations regarding their mobile applications were similarly themed and were centered on the assumptions that their mobile application would provide an additional platform that could be used to connect families with information from the district, and allow them to reach more parents. One participant, P5, "hoped to see an increase in family participation and an increase in the number of families keeping scheduled appointments" as a result of the implementation of their district's mobile application. Participants also referenced the notion that parents access information frequently on their mobile devices and prefer to use their cell phones for connecting with schools and their districts. The respondents indicated that the decision to implement their mobile applications was driven by the desire to, "keep families connected to the school" (P5), provide a "one-stop location for family needs" (P2), and "reach more parents" (P7). The participants also stated that "parents/families always seem to have their smart phones

handy and accessible" (P6) and that they perceive mobile use in their communities to be high. A participant, "expected a one-stop-shop for parents, students and community members" (P8). Another participant indicated that they, "hoped to see an increase in family participation and an increase in the number of families keeping scheduled appointments" (P5). Another participant stated, "I am not sure we had expectations" (P2). This district hoped students and district families would download the application, log into the application to view full features, and ultimately find it beneficial. The expectations for the districts represented clearly indicated that families were the primary target stakeholder group for all the participants. Their expectations were largely about families having access to information through their apps and for the districts to be able to connect with and engage families using mobile app technology.

Integration. Despite citing many challenges regarding integration, compatibility with student information systems was a critical consideration for the districts during the planning process when they initially decided to research mobile application providers. The participants also found that, from their perspectives, websites are not generally suited for providing information in a mobile format and they decided to look into mobile apps because they "needed a way to provide similar information that is on the website in a phone-friendly way" (P3). In addition, "parents/families always seem to have their smart phones handy and accessible" (P6) and across the districts, mobile technology usage is perceived by participants to be high. Because of this, the participants saw a mobile application to be an appropriate way to keep families connected to the school and provide

a “one-stop location for families” (P2, P6, & P8) to access information. Participants ultimately expected their mobile applications to integrate with existing systems, websites, and district procedures in order for it to be an extension of existing work and information, not something that would be a standalone implementation.

Content. The responses indicated that families were the target audience and that district administrators expected the mobile application to provide families with an additional way to access information, an integrated option for accessing information, and a communication method that offered “ease of use” (P3) for users. A participant (P4) specifically referenced the expectation that the mobile application would give the district the capacity to utilize push notifications as a communication method for home/school communications. Participants also referenced the notion that parents access information frequently on their mobile devices and prefer to use their cell phones for connecting with schools and their districts. The respondents also indicated that the decision to implement their mobile applications was driven by the desire to take advantage of an “additional means of communication" (P9). Their expectations for content was, again, based on the fact that families in their districts were the target stakeholders for the mobile app implementations. The participants expected their mobile apps to allow families to access the content families want to be able to find, and for districts to use the apps as a place where content districts want families to have is accessed by mobile-app users.

Discrepant Data. One seemingly outlying response to this question was, “the superintendent wanted it” (P8). While this was not common, it is assumed

superintendents in all districts ultimately wanted the mobile applications because they have the final decisions for all purchases made in school districts. In this particular case, the superintendent may have been the person proposing the mobile app, and in other cases it was generally the district administrators involved in this study.

Research Subquestion 2

How did administrators feel regarding whether or not the app met expectations and how would they describe why they feel that way? The response frequency that emerged when organizing this data by category were communication at 61%, stakeholders at 28%, and integration at 11%. The details are provided in the following paragraphs.

Communication. A theme emerged regarding mobile applications' ability to provide families with an additional place to access information that they are interested in and information that schools/districts want them to have. Participants identified mobile apps, generally, as an "additional platform that could be used to connect families with information from the district" (P5) and an "additional means of communication" (P2, P3, P4 & P7). Many participants referred to their mobile apps as "one-stop shops" (P2, P6, & P8) for families to access information and a communication method that offered "ease of use" (P1 & P9) for users because of the frequent use of cellular devices across communities. District administrators expected their mobile applications to provide families with an additional way to access information, but a number of the participants

specifically stated the fact that the mobile app is “one option for communications, but it is not the only option” (P1, P2, & P7).

Stakeholders. When answering whether or not the mobile application met expectations, the nine respondents overwhelmingly answered that their mobile applications met their initial expectations (at least anecdotally), however, most also indicated that more work is necessary to make it valuable for families and for it to be considered fully implemented. One participant responded, “yes, but more work must be ongoing across stakeholders to make it most valuable” (P1). Also, while one district did use survey data to inform the decision to implement a mobile app, the participant (P3) suggested that family involvement be more of a focus area for districts considering mobile applications. Their internal decision-making process involved only four to five central office people and was heavily influenced by the fact that their student information system representatives suggested the mobile application company. Generally, the participants concluded, anecdotally, that their apps met initial expectations around reaching the target stakeholders through implementation. They also, however, concluded that more work is needed to make the apps valuable for families.

Integration. One interviewee (P2) spoke about working directly with the mobile app company, as an individual, during all phases of the mobile app implementation. The app company “did the heavy lifting” (P2). The app company frequently contacted the participant and the technology department when there were questions. The participant stated that “analytical information about what parts of our website get the most traffic”

partially drove decisions about options that could be part of the app. At the time of the interview, the participant stated that the responsibilities continue to fall on the interviewee, and the district continues to rely on the mobile app company to assist with updating the app. The district recently "changed to a different fee payment system and the app company had to update the application to make sure families would be directed to the new site" (P2). The participant is responsible for internal updates "such as when our superintendent retired and a new one was hired" (P2). Another district administrator (P6) indicated that their application is only currently available for android devices and that additional accessibility options are in the process of being developed.

Research Subquestion 3

What were the major successes and challenges of the implementation and initial use of the mobile app, from their perspective? When the responses to this question were organized by category, the percentages of responses within each category were as follows: integration 36%, content 30%, stakeholders 17%, communication 14%, and discrepant data 3%. The details are provided in the following paragraphs.

Integration. Integration with existing systems and data presented as an emerging theme for an area where challenges were experienced. A challenge for many of the participants revolved around data and information streaming to the app from other systems. Two of the participants (P4 & P8) cited that getting their apps to be fully implemented with the correct, useful parent data has been challenging. Another participant said, "the application is not as functional as families would like" (P3). For

participant 3 functionality does not pose a challenge at all, the main challenge for the district is the data feeding into the mobile application. A major challenge for the administrator and the district is the fact that "out-of-date information is in the app, and it is difficult to keep information current" (P3). The participant also indicated that, "growing into technology is a mindset shift for schools" and that "people won't keep using the app if it isn't useful" were two areas that presented challenges and concerns.

The major challenge that participant 4 spoke about was "getting the parent data right to make the app useful" (P4). The participants highlighted the importance of ensuring that the data in the app is always current and "making sure it integrates with what you are currently doing" (P4). Another district experienced a challenging process when integrating with other systems. The participant stated that it, "was not a smooth process" (P8). Since the mobile applications rely on other systems to feed them with information, making sure that other systems consistently stream information into the app proved to be a challenge for the participants.

Content. Despite the focus on content and information, a number of participants found that "the application is not as functional as families would like" (P3). In addition, a theme that emerged across participants is the challenge of keeping the apps updated and getting parent portal aspects of the apps to work properly. In addition to keeping the information in the app current, it was a focus of the districts to work on providing relevant information for families so the app is valuable to them. These were areas of concern for many of the participants and created challenging times for their districts. A

major challenge that one of the participants shared was that “out-of-date information is in the app, and it is difficult to keep information current” (P3). A number of the district administrators involved in this study experienced challenges with the data/information that they feed into the mobile application and despite the clear trend regarding feeding the app with information, only one participant talked about using “analytical information about what parts of our website get the most traffic” (P2) to inform decisions about options that could be part of the app. It became apparent that the participants believe that additional and ongoing work is necessary in order to continually add value to their apps. “Work is necessary to make it the most valuable for families” (P1). “Work is necessary to make it considered fully implemented” (P8). Getting the district apps to be fully implemented with the correct, useful parent data has been challenging for the participants. One participant shared the fact that their app does not currently provide translation features, but that this is something they hope is rolled out with a future update. The themes that emerged across participants regarding content were concerns about keeping the apps updated and getting parent portal aspects of the apps to work properly. In addition to keeping the content in the app current, it was a focus of the districts to work on providing relevant content for families so the app continues to be valuable to them.

Stakeholders. Participants indicated that successes regarding the implementation of their mobile applications included a large amount of downloads in a short amount of time and the ability to reach families quickly in a technology they were used to and had

readily available for access. Most of the participants anecdotally found that parents like the app and find it useful and helpful. Participants indicated that challenges regarding the implementation of their mobile applications were largely about getting families access to the app, getting families to log in on the app, and keeping the app updated with relevant information for families.

One participant said, “keeping the app updated and teaching administration how to use it” (P2) were challenging aspects of the implementation of the mobile app. Administrators in this district where P2 worked at the time of the study have not really been open to learning to use the app for communications, and there has not been a consistency with administrators using the app to push information out to families. That being said, they were not resistant to the implementation of the app. The participant “would like to get the administrative assistants at each school access to the app, however, they also feel crunched for time so I have not pushed too hard” (P2). Also, this district maintains the viewpoint that the app is a tool, but not the only one they have. They recognize the fact that not all families have downloaded the app and logged in, so they cannot assume that the app can be the sole means of communication. As stated previously, administration was not resistant to the proposal to implement a mobile app, but budget was a significant concern and challenge. The technology department ended up picking up the cost and managing the app processes from planning to roll out.

Communication. Communication with families and internal staff emerged as a theme participants experienced challenges around. One district administrator identified

“letting families know it is available” (P7) as their major challenge and another stated that “managing IDs and passwords so parents can log in and see personal information about their students” (P9) has been the most significant challenge for their district. Getting parents to download the app and login was a significant challenge for another district, as well. The participant from that district (P4) also cited internal issues related to a lack of communication and collaboration on the project, as well. P1 shared that when their district was ready to roll out the mobile app the educators and parent groups shared the responsibilities associated with marketing the app and they indicated "we most certainly have people already a part of our school culture that can do such things" (P1). It was important to the participant and the group responsible for marketing the app that it be communicated to the community that "the app is one option to access information that is also available in many other places" (P1). Without sending this message, it was perceived to appear overwhelming with the number of resources and information. Communicating with families about the app was an area of concern for the participants and communicating with staff about the implementation and roll out of the app was a challenging aspect of the work.

Discrepant Data. Two additional comments presented as discrepant data. One of the comments was about Internet stability in rural communities (P5). The other was about not having an iPhone app, as of yet (P6).

Research Subquestion 4

How was the planning process and roll out of the app experienced by administrators? This data were organized by category and communication emerged as the prevalent response category with 29% of responses. The remaining responses were categorized as follows: planning 26%, stakeholders 23%, integration 19%, and discrepant data 3%. The details are provided in the following paragraphs.

Communication. A theme that emerged regarding communication was the difficulty districts experienced with the roll out of their apps was related to letting families know it is available. Communicating the availability of the mobile application to families and making sure families didn't feel overwhelmed by the amount of information shared within the mobile app was common among participants. Participants (P1 & P5) mentioned privacy concerns and setting levels/frequency of communications as challenges. Another challenge that two of the participants (P1 & P6) mentioned was related to communicating the availability of the mobile application to families and making sure families did not feel overwhelmed by the amount of information shared within the mobile app. A participant specifically mentioned that, "you need to make sure parents do not feel overwhelmed when you offer them a lot of options and access to multiple data streams" (P1). The successes mentioned widely involved parents enjoying access to information on their mobile devices, quick roll out, and a large number of downloads in a short amount of time. Two of the districts represented in this study worked closely with families to plan and roll out their mobile applications, as stated by

the participants (P1 & P3). Both of the administrators who oversaw these two implementations found the processes to be easy and smooth. Another participant mentioned that, “it was no problem describing the functions and uses of the apps to the families” and that “because the population we work with is predominantly young families, there were no generational issues” (P5). Three of the participants (P2, P4, & P8) indicated that they worked very closely with, and relied upon the mobile application companies to work with the district regarding what would be included in the app and to provide best practices as guidelines for the districts to follow. These participants found the companies to be responsive to requests and communicative. Three participants highlighted the need for continued promotion, specifically each school year so parents download it and sign in. They used a quick start guide, “heavy promotion” on all our other channels, and a roll out of additional products simultaneously (P3, P8, & P9). One district administrator specifically mentioned that “their design team was small and should have had more community involvement” (P3).

Planning. The major theme regarding the planning process that emerged was the fact that the processes related to implementation, roll out, and initial use of the mobile app were largely the responsibility of the participant, alone. One participant “relied upon the mobile application companies to work with the district regarding what would be included in the app and to provide best practices as guidelines for the districts to follow” (P4). Another interviewee spoke about working directly with the mobile app company, as an individual, during all phases of the mobile app implementation. The app company “did

the heavy lifting" (P2). Two participants (P6 & P8) did also mention that the planning process took longer than they expected, but the remaining participants indicated that the process was quick.

One participant (P3) spent half of a year researching companies that could provide the district with a mobile application and services to assist with planning and implementation. Ultimately their choice was made based on pricing and available customer support, though the participant did indicate that functionality should outweigh cost when considering mobile application providers. The company providing their mobile application also indicated to the district that their mobile app service was compatible with their student information system, which was a critical consideration since the integration of the student information system and the mobile application would provide parents with information they want access to and assist with making the app valuable for families. Another interviewee, (P3), indicated that the first step their district took when they thought about implementing a mobile application was looking at parent survey data. Parent responses on surveys indicated that "90% of the district's parents/guardians have smart phones and that using a smart phone is the primary way they access information" (P3).

Stakeholders. The participants suggested that stakeholder groups should be more involved in the planning, implementation, and roll out processes when districts are considering using a mobile application for communicating with families. Participants were asked what they would do differently if they were to implement mobile apps again.

The theme of engaging diverse stakeholder groups emerged. A participant, P1, realized that “more work must be ongoing across stakeholders to make it most valuable” when thinking about their district’s mobile app. A number of participants suggested that family involvement be more of a focus area for districts considering mobile applications. One of the districts, as indicted by P3, did work “closely with families to plan and roll out their mobile application” but also recognized that they “should have had more community involvement” throughout the processes. A number of participants also recommended that community organizing be a more integral part of the planning, implementation, and rollout processes in order to include community voice more. Many recommendations were made regarding getting feedback from stakeholders before beginning the planning process by surveying “students, families and staff about how they will use the app” (P2) and “making sure the IT staff is looped in” (P8) and “getting lots of community input and buy-in” (P3). An interesting perspective that one of the participants shared is that “growing into technology is a mindset shift for schools” (P3) so the work takes time. One interviewee (P1) shared that the school leadership worked directly with parents to plan for the implementation of their mobile app. The participant indicated that there should be an equal representation of educators and parents at the table during the processes associated with planning and implementing a mobile app, because both groups represent important stakeholders. Students were not involved in this district, but the participant indicated that if they were to repeat the process they would have students play a role in the decision making. They did, however, completed a survey with families prior to

proposing the mobile app and found that 94% of their families had access to a smart phone. Previously, this district had implemented social media and found that using this technology was successful in engaging families.

Integration. Four of the participants specifically mentioned that user identification numbers, getting families to log into mobile applications, and getting parent portal features to work appropriately/effectively were challenging aspects of this phase (P3, P4, P8, & P9). These challenges all indicated that the parent portal aspect of the mobile applications was a significant area of concern that presented challenges. One participant stated, "it took several years to get the parent portal features to work" (P8). Another interviewee (P4) stated that the integration with phone tree system was the driving force behind the decision to implement a mobile application. "The main focus was to get the phone tree part working, app was secondary" (P4). The participant said, "the phone tree system came with the mobile app and it's been fine except for the student information system integration" (P4). The processes related to implementation, roll out, and initial use of the mobile app were largely the responsibility of the participant, alone. The district used paper versions of the parent information form at the beginning of the year, so the workload was significant for the participant and the technology department. They also found that family's phone numbers and addresses were not always up to date, and change frequently, presenting challenges with keeping contact information up to date.

Discrepant data. A unique response to this question came from a participant who used a team of students to create the district's mobile application. That participant said, "it took longer than expected (3 years) as it was a part of the technology curriculum at our IT High School. The students had to become embedded in the process over the period of time" (P6).

Research Subquestion 5

What recommendations would be helpful for other district-level administrators thinking about implementing a mobile application? When organizing the responses to this question by category, stakeholders emerged as the predominant category with 41% of the responses. Responses regarding planning represented 29% of the data, communication: 18%, and integration: 12%. The details are provided in the following paragraphs.

Stakeholders. Since the participants experienced being the sole person responsible for their mobile applications, recommendations were made by the participants to survey "students, families and staff about how they will use the app" (P2) before beginning the process and engage larger stakeholder group in decision making and screening of potential apps. A recommendation that a participant (P2) made is that district's should survey "students, families and staff about how they will use the app" before beginning the process. The participant also said, "I would have more people involved so that we take more advantage of the push notification aspect of the app." The suggestion was made by P3 that community organizing be a more integral part of the planning, implementation, and rollout processes in order to include community voice

more. “Larger stakeholder group needs to be involved in decision making and screening of potential apps” (P3). A suggestion that one interviewee (P3) made was for districts to bring in “an outside consultant to facilitate the process and run a focus seminar with stakeholders because we don’t know what we don’t know” (P3). The recommendations from one interviewee (P4) were largely about having more stakeholders involved in all the processes from planning to roll out, focusing on integration and automation, and fitting the work into existing workflows. While the district experienced significant challenges, a positive aspect that their district did notice immediately during the initial use phase was that administration began using texting and push notifications more with families right away. Ultimately, participants recommended engaging a representative group of stakeholders from the beginning of the processes associated with implementing a district mobile application and throughout all aspects of the work associated with the implementation, roll out, and initial launch of the mobile applications. The participants suggested that stakeholder groups should be more involved in the planning, implementation, and roll out processes when districts are considering using a mobile application for communicating with families. Participants were asked what they would do differently if they were to implement mobile apps again. The theme of engaging diverse stakeholder groups emerged.

Planning. One participant (P1) stressed that districts considering a mobile app should "build it yourself" (P1) and "do not rush" (P1). Taking the extra time to customize the mobile app was beneficial for this district and the participant shared features within

the app that were unique and based on family needs and school goals. The participant said, "it is easy to have someone make it in a short amount of time, but you lose the personalization and ownership of students, staff and families if you buy it off the shelf" (P1). The administrator shared that, as with any new technology or initiative, there were considerations that needed to be factored into the planning process like "board policy, privacy, and overlapping resources" (P1). One participant stated, “work is necessary to make it the most valuable for families” (P1). Another participant indicated “work is necessary to make it considered fully implemented” (P8). Getting the district apps to be fully implemented with the correct, useful parent data has been challenging for the participants. One participant shared the fact that their app does not currently provide translation features, but that this is something they hope is rolled out with a future update. “Parents/families always seem to have their smart phones handy and accessible” (P6) and across the districts, mobile technology usage is perceived by participants to be high. Because of this, the participants saw a mobile application to be an appropriate way to keep families connected to the school and provide a “one-stop location for families” (P2, P6, & P8) to access information. These areas of concern and growth emerged as areas participants indicated as important considerations for administrators and districts considering mobile applications. The participants also suggested that the apps be fully tested before rolling them out to families. Two participants (P2 & P4) mentioned budget and pricing specifically as an area of concern and a challenge, and cost was cited a part of

the planning process for many of the other participants, so this would be an area of consideration for other districts considering to implement mobile applications.

Communication. Recommendations were made by many of the participants to include a plan for marketing, communication, and continued promotion. One participant recommended marketing and promoting the app, "each school year so parents download it and sign in" (P9). Two of the participants (P1 & P6) indicated that making sure families didn't feel overwhelmed by the amount of information shared within the mobile app was a key consideration and that this type of communication was an important thing to keep in mind when rolling out a mobile app. A participant specifically mentioned that, "you need to make sure parents do not feel overwhelmed when you offer them a lot of options and access to multiple data streams" (P1). Two of the districts represented in this study worked closely with families to plan and roll out their mobile applications, as stated by the participants (P1 & P3). Both of the administrators who oversaw these two implementations found the processes to be easy and smooth. Three participants highlighted the need for continued promotion, specifically each school year so parents download it and sign in. They used a quick start guide, "heavy promotion" on all our other channels, and a roll out of additional products simultaneously (P3, P8, & P9).

Integration. Participants recommended that districts should spend time thinking about what they want the app to do before implementing it. For the administrators involved in this study, knowing what they wanted their apps to do largely related to the integration with existing systems. A participant stated,

> "going forward, we need to decide if we will bundle the app with other things we do such as websites and emergency notifications. We have been reluctant to do so because of time and what we currently use works well. However, we do realize there would likely be a cost savings" (P2).

This district had anecdotal information about parents wanting to have access to all websites through one area so they determined that an app made a lot of sense. The participant also stated, "I also wish we had considered bundling all of tools to see what kind of cost savings we could have achieved" (P2). It became apparent that the participants believe that continual and ongoing work is also necessary in order to continually add value to their apps. "Work is necessary to make it the most valuable for families" (P1). "Work is necessary to make it considered fully implemented" (P8). Getting the district apps to be fully implemented with the correct, useful parent data has been challenging for the participants. One participant shared the fact that their app does not currently provide translation features, but that this is something they hope is rolled out with a future update.

Summary

Despite the diverse districts represented in this study, as well as the different perspectives represented with the participants, there were clear themes that emerged through the data analysis. Families emerged as the target stakeholder group for the

district mobile applications and engaging diverse groups of stakeholders was a key recommendation participants made regarding planning to implement mobile applications. Despite the fact that families emerged as the target stakeholder group, the participants stated that parent login information presented challenges and parent portal features was a significant area of concern that was brought to light through the data analysis. Integration with existing systems was a key consideration and uploading data into the app was an area of focus for the participants. Supplying mobile applications with current content was important to participants and keeping the content in mobile applications relevant was an area of concern. A consistent recommendation was that marketing the availability of mobile applications needs to be ongoing. Participants felt solely responsible for owning the processes associated with implementing and rolling out mobile applications and application company involvement was an important aspect of the support they received. Logistically, budgetary concerns were prevalent within the data gathered, and the length of time it took to develop and implement apps was a key consideration. Chapter 5 includes conclusions and recommendations for this study.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this qualitative study was to explore the processes of implementing and rolling out district mobile applications designed as communication tools to connect districts, schools, homes, and communities. I designed the study to examine these experiences from the perspective of the district administrators responsible for overseeing the related processes and procedures through the use of electronic questionnaires, video conferencing and phone interviews, and an archival document review. I formulated the research questions to uncover what administrators expected from the mobile applications, how they felt regarding whether mobile applications met their expectations, how they experienced the planning and roll out processes, and what major successes and challenges they experienced during implementation and initial usage of the apps. Nine district-level administrators from across the country participated in the study. My data analysis process followed the steps as presented in *Qualitative Research from Start to Finish* by Yin (2011).

With an increasing number of demographically-diverse people using a variety of smart devices and so much of their time spent using mobile applications, there is a unique opportunity to use district-level mobile applications to connect school systems with a significant number of the families they serve, in addition to members of their communities. I designed this study to explore the experiences of implementing and

rolling out district mobile applications designed as communication tools to connect districts, schools, homes, and communities and add to the literature on the topic.

Families emerged as the target stakeholder group for the district mobile applications and the reasoning behind all of the implementations was to reach this target audience. Participants expected their apps to help them reach more parents when communicating important information to the families and communities they serve. Participants also suggested that various stakeholder groups should be more involved in the planning, implementation, and roll out processes when districts are considering using a mobile application for communication purposes. When asked what they would do differently if they implemented their apps again, engaging stakeholder groups was a theme that emerged. A number of participants specifically suggested that family involvement should be more of a focus area for districts considering mobile applications. A number of participants also recommended that community organizing be an integral part of the planning, implementation, and rollout processes in order to include community voices more. Many recommendations were made regarding getting feedback from stakeholders before beginning the planning process by surveying "students, families and staff about how they will use the app" (P2), "making sure the IT staff is looped in" (P8), and "getting lots of community input and buy-in" (P3). An interesting perspective that one of the participants shared was that "growing into technology is a mindset shift for schools" (P3), so the work takes time.

Integration with existing systems and data was a prevalent emerging theme. A challenge for many of the participants revolved around data and information streaming to the app from other systems. The participants highlighted the importance of ensuring that the data in the app are always current and "making sure it integrates with what you are currently doing" (P4). Another district experienced a challenging process when integrating with other systems; the participant stated that it, "was not a smooth process" (P8). Since the mobile applications generally rely on other systems to feed them with information, making sure that other systems consistently stream information into the app proved to be a challenge for the participants. Despite the challenges regarding integration, compatibility with student information systems was a critical consideration for the districts during the planning process when they initially decided to research mobile application providers. The participants also found that, from their perspectives, websites are not generally suited for providing information in a mobile format, and they decided to look into mobile apps because they "needed a way to provide similar information that is on the website in a phone-friendly way" (P3). In addition, "parents/families always seem to have their smart phones handy and accessible" (P6), and across districts, mobile technology usage is significant. Because of this, the participants saw a mobile application to be an appropriate way to keep families connected to the school and provide a "one-stop location for families" (P2, P6, & P8) to access information.

Another theme emerged regarding the ability of mobile applications to provide families with an additional place to access information that they are interested in and

information that schools and districts want them to have. Participants identified mobile apps, generally, as an "additional platform that could be used to connect families with information from the district" (P5) and an "additional means of communication" (P2, P3, P4, & P7). Many participants referred to their mobile apps as "one-stop shops" (P2, P6, & P8) for families to access information and a communication method that offered "ease of use" (P1 & P9) for users because of the frequent use of cellular devices across communities. District administrators expected their mobile applications to provide families with an additional way to access information, but a number of the participants specifically stated the fact that the mobile app is "one option for communications, but it is not the only option" (P1, P2, & P7). Despite the focus on content and information, a number of participants found that "the application is not as functional as families would like" (P3). In addition, a theme that emerged across participants was the challenge of keeping the apps updated and getting parent portal aspects of the apps to work properly. In addition to keeping the information in the app current, it was a focus of the districts to work on providing relevant information for families so the app is valuable to them. These were areas of concern for many of the participants and created challenging times for their districts. A major challenge that one of the participants shared was that "out-of-date information is in the app, and it is difficult to keep information current" (P3). A number of the district administrators involved in this study experienced challenges with the data and information that they feed into the mobile application, and despite the clear trend regarding feeding the app with information, only one participant talked about using

"analytical information about what parts of our website get the most traffic" (P2) to inform decisions about options that could be part of the app. It became apparent that the participants believe that additional and ongoing work is necessary in order to continually add value to their apps. "Work is necessary to make it the most valuable for families," said one participant (P1). "Work is necessary to make it considered fully implemented," said another (P8). Getting the district apps to be fully implemented with the correct, useful parent data has been challenging for the participants. One participant shared the fact that their app does not currently provide translation features but that this is something they hope is rolled out with a future update. Overall, anecdotally, the participants stated that parents like the app and find it useful and/or helpful and parents enjoy access to information on their mobile devices.

A theme that emerged regarding communication was the difficulty the districts experienced with the roll out of their apps, specifically around communicating with parents. Many of the comments made about this were related to the process of letting families know the apps are available. Communicating the availability of the mobile application to families and making sure families did not feel overwhelmed by the amount of information shared within the mobile app was common among participants.

Another theme about a challenge many of the participants talked about was getting parents to log in and having staff "manage IDs and passwords so parents can log in and see personal information about their students" (P4). One participant summed up the challenges that many of the participants experienced by stating, "user identification

numbers, getting families to log into mobile applications, and getting parent portal features to work appropriately/effectively were challenging" (P9). Another participant found that "it took several years to get the parent portal features to work" (P8). One participant said their hope with implementing the app was that "students and district families would download the application, log into the application to view full features, and ultimately find it beneficial" (P2). Many participants experienced a significant percentage of their district's parents downloaded their mobile apps in a short amount of time. Recommendations were made by many of the participants to include a plan for marketing, communication, and continued promotion. One participant recommended marketing and promoting the app "each school year so parents download it and sign in" (P9).

The major theme regarding the planning process that emerged was the fact that the processes related to implementation, roll out, and initial use of the mobile app were largely the responsibility of the participant alone. One participant "relied upon the mobile application companies to work with the district regarding what would be included in the app and to provide best practices as guidelines for the districts to follow" (P4). Another interviewee spoke about working directly with the mobile app company, as an individual, during all phases of the mobile app implementation. The app company "did the heavy lifting" (P2). Two participants (P6 & P8) also mentioned that the planning process took longer than they expected, but the remaining participants indicated that the process was quick. Since the participants experienced being the sole person responsible for their

mobile applications, recommendations were made by the participants to survey "students, families and staff about how they will use the app" (P2) before beginning the process, engage larger stakeholder group in decision making and screening of potential apps, and to know what you want your app to do. The participants also suggested that the apps be fully tested before rolling them out to families. Two participants (P2 & P4) mentioned budget and pricing specifically as an area of concern and a challenge, and cost was cited a part of the planning process for many of the other participants, so this would be an area of consideration for other districts before implementing mobile applications. Two outlying comments made regarding the planning process were related to Internet stability in rural communities and not having an iPhone app.

Interpretation of Findings

Similar to the literature reviewed regarding mobile phone ownership, the participants in this study indicated that the majority of the families they serve have access to mobile technology and use this technology frequently. Participants identified mobile apps, generally, as an "additional platform that could be used to connect families with information from the district" (P5) and an "additional means of communication" (P2, P3, P4, & P7). Many participants referred to their mobile apps as "one-stop shops" (P2, P6, & P8) for families to access information and a communication method that offered "ease of use" (P1 & P9) for users because of the frequent use of cellular devices across communities. Various higher education studies have been conducted worldwide with consistent findings regarding the widespread ownership and usage of mobile phones

regardless of the schools' locations. These researchers have suggested that mobile phones are a viable option to utilize for communication purposes (Kennedy, 2010; Njoku, 2013; Rambe & Bere, 2013; UNESCO, 2010a, 2010b). Findings from multiple studies have supported the notion that students in higher education settings rely on mobile phones for constant communication and social acceptance (Campbel, 2005; Matthews, 2004; Negi & Godiyal, 2016). Barnett (2016) conducted a case study in a diverse urban setting and found that "access to technology was not the barrier to parental involvement in and of itself; in fact, all parents had access to technology" (p. 102). Similarly, in this study, participants indicated that the majority of the families and community members in their districts have access to mobile technology.

Udochukwu Njoku (2015) stated, "personal computers are, sadly, out of the reach of many students in most households.... The ubiquity, acceptability and accessibility of mobile phones today give them the quality to be the central technology for tomorrow's higher education" (p. 142). The participants in this study responded that, from their perspectives, websites are not generally suited for providing information in a mobile format, and they decided to look into mobile apps because they "needed a way to provide similar information that is on the website in a phone-friendly way" (P3). "Parents/families always seem to have their smart phones handy and accessible" (P6), and across districts, mobile technology usage was said to be significant. Because of this, the participants saw a mobile application to be an appropriate way to keep families connected to the school in comparison with seemingly outdated practices of focusing on

websites to provide families with information about the school system. In this new era of technology, some people have become reliant upon mobile devices for many different things beyond just making phone calls, and they will often turn to their mobile device for information before any other outlet (Lim et al., 2016; van Deursen et al., 2015). The participants in this study recognized the prevalence of mobile technology usage in their communities, which aligned with the findings of other studies that, generally, people are becoming more reliant on mobile phones to access a variety of information and perform a variety of daily tasks.

Participants in this study agreed that additional information from parents would be helpful in order to assist districts with the planning process before implementing mobile applications designed as communication tools. A number of participants specifically suggested that family involvement be more of a focus area for districts considering mobile applications. Hohlfeld et al. (2010) stated, “few studies have examined how information and communication technology can be used to increase and sustain community and parent involvement” (p. 391) and Downing (2011) stated, “no empirical research has been conducted to understand K-12 parents' attitudes about their school district's mass notification service” (p. 93). In alignment with this, participants made comments regarding getting feedback from stakeholders before beginning the planning process by surveying “students, families and staff about how they will use the app” (P2), “making sure the IT staff is looped in” (P8), and “getting lots of community input and buy-in” (P3). An interesting perspective that one of the participants shared is

that “growing into technology is a mindset shift for schools” (P3), so the work takes time. Another study (Palts & Kalmus, 2015), identified parents’ and teachers’ fear towards using technology to connect with each other and insecurity with digital communication tools as a significant barriers. They suggested, “practical trainings and workshops to enhance teachers’ and parents’ digital literacy skills would be needed to support the partners’ efficient use of technological tools in fast and dialogic information exchange” (p. 77). These findings align with suggestions made by participants in this study to build in opportunities for feedback and support designed for various stakeholders.

Rogers and Wright (2008) found that “parents and teachers are not taking full advantage of technologies to bridge the communication gap and build family-school partnerships” (p. 36). The findings in this study indicate, despite the focus on content and information, a number of participants found that “the application is not as functional as families would like” (P3). In addition, a theme that emerged across participants is the challenge of keeping the apps updated and getting parent portal aspects of the apps to work properly. One participant stated “work is necessary to make it the most valuable for families” (P1). Another participant indicated “work is necessary to make it considered fully implemented” (P8). Getting the district apps to be fully implemented with the correct, useful parent data has been challenging for the participants. This seems to indicate that mobile applications are not currently being taken full advantage of, similar to what was indicated in the literature regarding technological communication solutions.

District administrators involved in this study expected their mobile applications to provide families with an additional way to access information, but a number of the participants specifically stated the fact that the mobile app is "one option for communications, but it is not the only option" (P1, P2, & P7). This aligns with the findings from other studies indicating that mobile technology and apps should be integrated into an overall communication strategy. One researcher stated, "social media has value as part of an overall communication strategy, but more work is needed to determine the most effective way to use this channel in low-income populations" (Stroever, Mackert, McAlister, Hoelscher, 2011, p. A148). Participants in this study also determined that additional work is needed to determine how to integrate mobile applications into overall communication strategies.

Studies focused on new technologies and school/home communications methods/modalities identify texting as a viable option to connect educators and parents (Edwards, 2016; Goodall, 2014; Lazaros, 2016; Parker & Chen, 2013; Stephens, 2013; Thompson et al., 2015). Parents in one study felt that "receiving text messages would be a more effective method of communication as opposed to a traditional phone call home" (Lazaros, 2016, p. 23). A study (York & Loeb, 2014) that evaluated the effectiveness of a texting program called READY4K! found that the year-long texting support service positively affected home literacy work parents engaged in with their children, increased parent involvement in the school, and increased early literacy skills. The participants in this study stated that anecdotal evidence indicates that parents like the app and find it

useful/helpful and parents enjoy access to information on their mobile devices. Many of the schools involved in another study reported that technology had a significant impact on positive parental involvement and on communication capabilities. Smith et al. (2011) stated, “using technology to enable parent involvement had the benefits of instant communication and reducing the time costs associated with other communication methods. It also allowed for two-way communication, something not afforded when information is only sent to the parents” (p. 87). The participants in this study expected their mobile applications to help them reach more parents and one participant, “hoped to see an increase in family participation and an increase in the number of families keeping scheduled appointments” (P5) as a result of the implementation of their district’s mobile application. When answering whether or not the mobile application met expectations, the nine respondents overwhelmingly answered that their mobile applications met their initial expectations (at least anecdotally).

The diffusion of innovation theory informed the adoption of mobile applications in this study, especially because mobile application implementations represents a major shift to heavily relying on technology as a tool for communication between school, families, and the community. As the theory indicates, there are five categories of people involved when an innovation happens. The five categories include: innovators, early adopters, early majority, late majority, laggards, and sometimes nonadopters. It is important to understand that this theory does not seek to support the idea that people can be moved through the categories, rather, the theory supports the idea that the innovation

should be modified to meet the needs of people in all categories. “The diffusion of innovation theory is often regarded as a valuable change model for guiding technological innovation... It also stresses the importance of communication and peer networking within the adoption process” (Kaminski, 2011, para. 1). Based on the fact that the participants in the study were responsible for overseeing a new technological solution, it could be assumed that they fall into the first couple categories of people involved when an innovation occurs. Many also referenced the need to get other stakeholders involved, but did not indicate their specific needs regarding innovation and change. Participants made many recommendations for their peers during interviews conducted for this study, and their suggestions and potential opportunity for networking aligns with the theory. This theory could also serve as a guiding framework for future studies regarding the adoption of mobile technology in education, as it suggests meeting people where they are when providing support, rather than seeking to push them through phases. In educational settings, this is a recommendation that is repeated often when discussing how to serve families of students and bring them in as partners with school systems. Educators attempt to meet parents and families where they are with their skill levels, abilities, capacity, etc. instead of immediately trying to move them to another level.

The unified theory of acceptance and use of technology (UTAUT) also informed this study, as it applies to the categories that could be influential in perceptions regarding mobile applications. The UTAUT framework is often used to measure performance expectancy, effort expectancy, attitude toward using technology, social influence,

facilitating conditions, self-efficacy, and anxiety. These are the constructs said to impact acceptance and use of technology. UTAUT, as a theoretical framework, has been applied in many information technology related studies, yet it has not been widely used in educational contexts. The UTAUT model, if applied in educational contexts, could assist educators in planning technological implementations, as the model includes many of the aspects that could lead to issues with adopting new technologies. The UTAUT model informed the data analysis section of this study, particularly, in order to help group the responses regarding expectations and experiences with the mobile applications. Generally, the participants exhibited high, positive expectations for their mobile applications, a positive attitude about the potential for the apps, and high self-efficacy regarding technology skills. Contrastingly, the participants had high levels of anxiety around getting applications out to families, making sure the apps function the way they need to, and include the content they determine to be pertinent. A number of the participants also worked in isolation with mobile app companies, limiting the social influence surrounding the implementations. These constructs might play a role in the sustainability of the mobile application implementations and broader adoption of this type of technology.

The knowledge base that the previously mentioned school, family, and community partnership frameworks provide informed this study because the tenets of all of them have influenced the design of many districts' initiatives around school, family, and community partnership. The assumptions were influenced by the school, family, and

community partnership frameworks. Since families emerged as the target stakeholder group across all nine districts represented, this indicates that school, family, and community partnerships are an area of focus for the districts. In addition to families, it was mentioned by many of the participants that community voice is an important aspect to consider when implementing communication solutions in school districts.

Limitations of the Study

The first significant limitation of the study involves the number of participants who participated in the qualitative interview study. Due to the nature of the study, the number of individuals questioned for the study had to be limited in order to ensure enough time was dedicated to each interview. Since the initial electronic survey included mostly open-ended questions, I wanted to be sure I allotted a significant amount of time for development of secondary interview questions, thus the number of participants needed to be controlled. In addition, the number of participants who responded to the invitation to be a part of the study was limited, further restricting the number of participants. Due to the small sample size, representation was limited, however, there was a range of rural, urban, and suburban school districts represented. Given the timeframe of the study, the participants were also limited to innovators and early adopters of a new technology, which could have significantly influenced the responses. Other limitations were the size, location, and type of the study. The study was limited to nine school districts in the United States. Replicating this study across a broader range and larger number of school districts would support the findings in this study.

Recommendations

The study was limited to a number of school district administrators from school districts in the United States. Replicating this study across a broader range and larger number of school districts would support the findings in this study. It is recommended to include a range of suburban, urban, and rural school districts in future studies in order to have data to compare and contrast across a range of districts. A deeper phenomenological study in the future could provide additional insight into individual experiences, as well. Since this study was solely qualitative in nature, future research should include quantitative data to support findings. It is recommended that future studies include a broader representation of the school districts across the country. While rural, urban, and suburban experiences are represented in this study, the sample size was limited.

A recommendation for future studies would be to include a random sample of additional stakeholders from various stakeholder groups to identify which themes emerge with a random sample, and to determine if the themes from this study are similar. Given the timeframe of the study, the participants were also limited to innovators and early adopters of the new technology, which could have significantly influence the responses. A suggestion for future research would be to conduct a longer study in order to include other categories of adopters, including laggards, who might adopt a new technology years after the early adopters.

Implications

This small-scale, yet relevant research on mobile technology in the field of education contributes to the literature regarding technology trends in the education industry, specifically relating to using mobile applications as communication and connection tools with families and community members. With an increasing number of demographically-diverse people using a variety of smart devices and so much of their time spent using mobile applications, there is a unique opportunity to use district-level mobile applications to connect school systems with a large number of families and members of their communities. This qualitative interview study on the implementation of district mobile apps was designed to add to the understanding of how district-level administrators with direct oversight of the implementation and initial use of mobile apps experience mobile-app technology in the context of family and community engagement with school systems. It also adds to the literature regarding how technology implementations can potentially support school, home, and community partnerships, in general.

The findings from this study have the potential to impact parents and community members on an individual level because it informs the way information is shared from school districts to individual people. With access to information, individuals could potentially experience shifts in attitudes, behaviors, and skills. The findings could play a role in the ways families and communities engage with schools to support student learning, as well. Regarding organizations and policies, the findings from this study have

the potential to inform the decisions school districts make regarding communicating with families and communities. Ultimately, this study adds to the information regarding how school districts communicate with the families and communities they serve, which has the potential to be transformational regarding relationships and supporting student learning.

With a number of diverse residents across the country, it would seem to be beneficial that school systems find ways to engage families and the community in order to best serve their student populations. The results of one study (Smithet al., 2011) identified technology as a significant means to engage low-income families. In another study (Zickuhr & Smith, 2012), it was identified that both African Americans and English-speaking Latinos are just as likely as Whites to own a mobile phone, and are even more likely than Whites to use their phones for a wider range of activities. These findings support the need for this type of study, and demonstrate how the findings of this study could contribute to positive social change initiatives around home, school, and community connections. It will also be important for future studies to look at the usage of built-in translation services to determine if families whose first language is not English might find that particular service to be beneficial when they are receiving information. In addition to analyzing the experiences regarding the implementations and initial usage of the mobile apps, this study was designed to also examine the major successes and challenges of these implementations. The findings indicate that districts do believe that mobile applications are a way for them to reach more families, but that more information

and work is necessary in order to fully implement these types of communication solutions.

Since the participants in this study experienced negative feelings about being the sole person responsible for their mobile applications, it is recommended to engage larger stakeholder group in decision making and screening of potential apps. It is recommended that families, students, staff, and community members be a more integral part of the planning, implementation, and rollout processes in order to include stakeholder voice more. Ultimately, participants recommended engaging a representative group of stakeholders from the beginning of the processes associated with implementing a district mobile application and throughout all aspects of the work associated with the implementation, roll out, and initial launch of the mobile applications. The participants suggested that stakeholder groups should be more involved in the planning, implementation, and roll out processes when districts are considering using a mobile application for communicating with families. Districts should also spend time thinking about what they want the app to do before implementing it. For the administrators involved in this study, knowing what they wanted their apps to do largely related to the integration with existing systems. It became apparent that the participants believe that continual and ongoing work is also necessary in order to continually add value to their apps. Getting the district apps to be fully implemented with the correct, useful parent data was challenging for the participants in this study, so a key recommendation for future implementations would be integrating these concepts into the planning process.

Additionally, it is recommended that districts include a plan for marketing, communication, and continued promotion of their mobile applications.

Conclusion

Mobile technology has rapidly gone from the 1g analog phone capable of just mobile calling to today's version of the 4g smartphone with full user support for accessing multimedia content, using wearable devices, and streaming in high-definition and real-time (Banupriya, Suba, Rajalakshmi, & Rajasri, 2015; Payal & Kumar, 2014). In 2 years, (2013 and 2014) smart phone usage in the international market grew by 406 million, adding up to 1.82 billion devices in total, and the international usage of the Internet on mobile devices increased by 81% (Stoyanov et al., 2015, para. 1). It appears that this rapid growth will continue, based on the statistical increase in smart phone and mobile Internet usage. In 2014, the number of active mobile subscriptions exceeded the total world population (Ericsson, 2014; Kemp, 2014).

The visible commitment a number of people have made to their cellular phones also appears to support the prediction that mobile phone and smart technology usage will continue to grow. Statistics show that on average young adults send over 100 text messages per day and 3,200 texts per month, they check their phones around 60 times a day, and they use their phones as alarm clocks with it close to them even as they sleep (Roberts & Pirog III, 2013; Srivastava, 2005). Studies have also shown that some people become fearful and anxious when disconnected from their mobile devices or unable to physically look at their screens (Clayton et al., 2015; Przybylski et al., 2013; Rosen,

Carrier, & Cheever, 2013; & Rosen et al., 2013). It is clear that devices have become an integral part of daily life for many people. According to one study, application usage now occupies almost 90% of the total time average U.S. mobile consumers spend on their phones (Heaton, 2014). It appears that technology trends specifically relating to mobile applications accessed through smart phone technology will continue to become more and more relied upon, and personalized as the industry progresses into the next generation of mobile technology.

In this new era of technology, some people have become reliant upon mobile devices for many different things beyond just making phone calls, and they will often turn to their mobile device for information before any other outlet (van Deursen et al., 2015 & Lim et al. 2016). Worldwide use of these technologies include people of all backgrounds, socio-economic statuses, and levels of education. Because of this, there is a unique opportunity to reach a broad audience of consumers through one modality. Since research has indicated that family, school, and community relationships have influenced student success (Henderson & Mapp, 2002; Lewin & Luckin, 2010; Grant, 2011; Olmstead, 2012; Smith, et al., 2011) and mobile technology continues to grow in popularity and usage (Carbonell, Oberst, & Beranuy, 2013; Poushter, 2016; Lim, Secci, Tabourier, L. & Tebbani, B., 2016) mobile technology might begin to significantly impact school/home/community relationships, yet there is a significant gap in the literature regarding this topic. Studies have indicated that technology is not always used to its full advantage to help develop meaningful partnerships between schools, homes,

and the community at large and that further research could be useful to evaluate how technology can be used to strengthen partnerships (Rogers & Wright, 2008; Lewin & Luckin, 2010; Thompson, Mazer, & Flood Grady, 2015).

These statements are particularly relevant because as people continue to use mobile, smart, and application technologies more frequently for personal communications, the communication gap could continue to widen if schools do not seek to meet families and the community where they are in regards to their choices of communication modalities. Companies have begun designing district mobile applications for the specific purpose of building and nurturing the complex relationships between schools, diverse families, and a diverse community. I designed this study so I could examine how the district-level administrators who directly oversaw the developments experienced the implementation and initial use processes with these types of mobile applications. This study adds to the literature focused on the topic of implementing and using a mobile technology tool for communicating between home/school/community.

The purpose of this qualitative interview study was to explore the processes of implementing and rolling out district mobile applications designed as communication tools to connect districts, schools, homes, and communities. Given the gap in the literature, I designed this study to add to the literature informing the field of education about mobile technology implementations that could potentially support parent, family, and community partnerships. This study was designed to gather information from the perspective of district administrators regarding their experiences with district mobile

applications as the front-line individuals overseeing the related processes. Through a survey, interviews, and archival documents, I examined administrator experiences regarding what they expected from their district mobile applications and how they felt regarding whether or not mobile applications met their expectations. I also investigated how the planning and roll out processes were experienced by these individuals and what major successes and challenges were experienced during implementation and initial usage of the apps. As district administrators with direct oversight of the implementation, roll-out, and initial-use phases of their district's mobile applications, this target participant population gave me the opportunity to shed light on the experiences of the lead people in charge for these specific implementations. As the front-line individuals, the administrators with oversight of these projects were able to provide a foundational look into the processes associated with implementing a mobile application at the district level. They also were able to identify gaps they experienced in their processes and make informed recommendations for other administrators considering implementing mobile applications for communication purposes in other districts.

Despite the diverse districts represented in this study, as well as the different perspectives represented with the participants, there were clear themes that emerged through the data analysis. Families emerged as the target stakeholder group for the district mobile applications and engaging diverse groups of stakeholders was a key recommendation participants made regarding planning to implement mobile applications. Despite the fact that families emerged as the target stakeholder group, the participants

stated that parent login information presented challenges and parent portal features was a significant area of concern that was brought to light through the data analysis. Integration with existing systems was a key consideration and uploading data into the app was an area of focus for the participants. Supplying mobile applications with current content was important to participants and keeping the content in mobile applications relevant was an area of concern. A consistent recommendation was that marketing the availability of mobile applications needs to be ongoing. Participants felt solely responsible for owning the processes associated with implementing and rolling out mobile applications and application company involvement was an important aspect of the support they received. Logistically, budgetary concerns were prevalent within the data gathered, and the length of time it took to develop and implement apps was a key consideration.

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